



Mt. Hood Planning Unit

PROPOSED INTERAGENCY PLAN



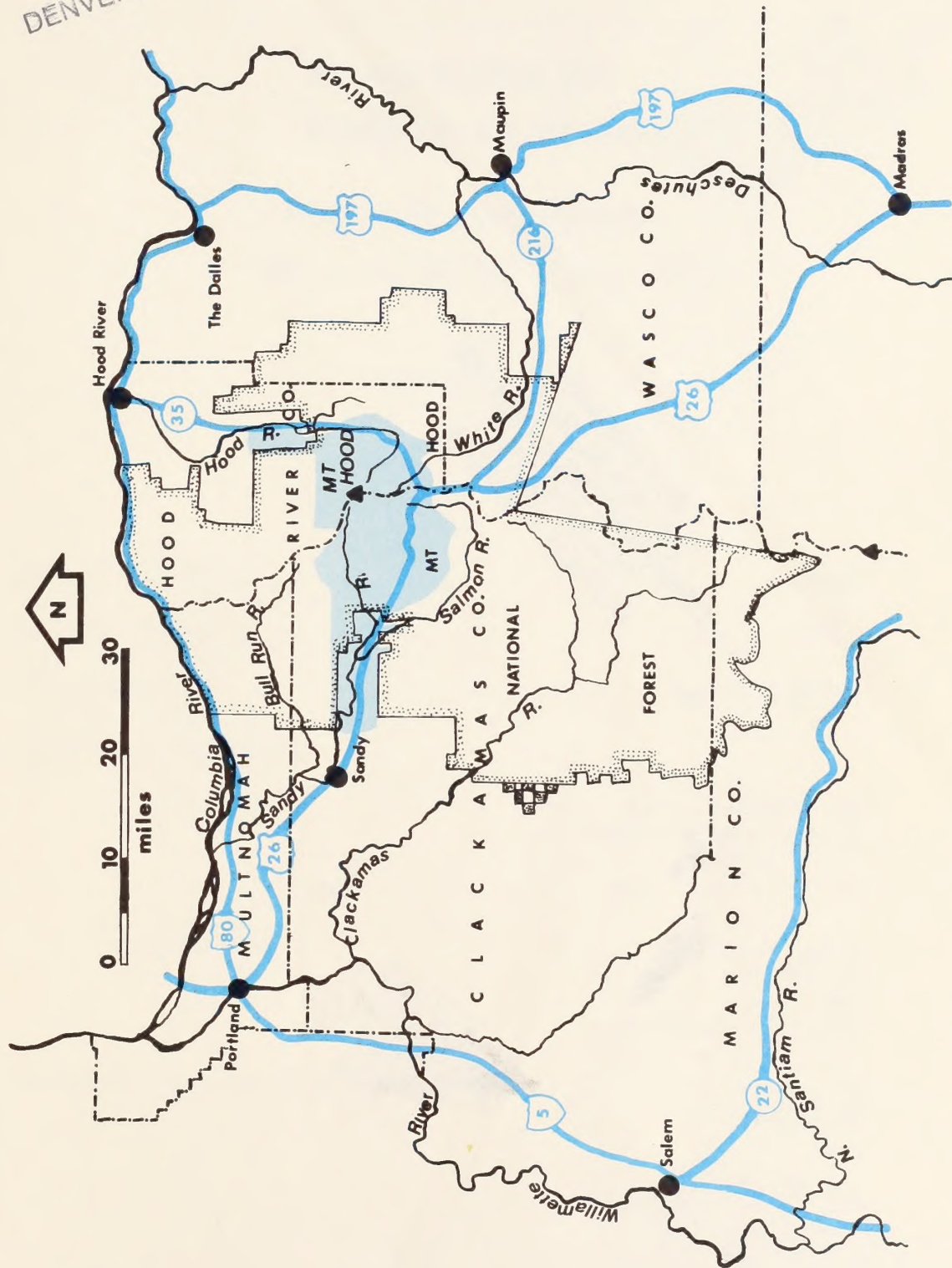
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ENVIRONMENTAL STATEMENT

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USDA, FOREST SERVICE; USDI, BUREAU OF LAND MANAGEMENT
CLACKAMAS COUNTY; HOOD RIVER COUNTY, OREGON
ENVIRONMENTAL IMPACT STATEMENT

MT. HOOD PLANNING UNIT
INTERAGENCY LAND USE PLAN

Prepared in accordance with
Section 102 (2) (c) of P.L. 91-190

JANUARY 1976

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TYPE OF STATEMENT DRAFT

DATE OF TRANSMISSION TO CEQ MAR 1 1976

TYPE OF ACTION ADMINISTRATIVE

RESPONSIBLE OFFICIAL

On USFS Lands Forest Supervisor
Mt. Hood National Forest
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Portland, OR 97233

On BLM Lands State Director
Oregon State Office
PO Box 2965
Portland, OR 97208

Decision Authority on Private Lands Clackamas County, OR
Hood River County, OR

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LIST OF PARTICIPANTS

MT. HOOD INTERAGENCY PLANNING TEAM PARTICIPANTS

Bureau of Land Management
Clackamas County
Columbia River Association of Governments
Hood River County
Mid-Columbia Economic Development District
Oregon State Department of Transportation
Oregon State Forestry Department
U. S. Forest Service

Mt. Hood Planning Unit Citizen Advisory Committee

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Cranston Fosburg
Bill Furrow
Alan Goudy
Philo Gregg
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Ruth Love
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Heather Henderson
Florence McKenzie
Betty Merten
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Nancy Thornton

Other Participating Government Agencies

Federal

Bureau of Outdoor Recreation
Environmental Protection Agency
Pacific Northwest Forest & Range Experiment Station
Soil Conservation Service

State

Department of Environmental Quality
Department of Fish and Wildlife
Department of Geology & Mineral Industries
Land Conservation & Development Commission
Portland State University
Oregon State University
State Engineer's Office
State Extension Service
State Health Department
State Historic Preservation Office
State Water Resources Board.

Regional

Portland Metropolitan Area Local Government Boundary Commission

Local

Department of Public Works-Hood River & Clackamas Counties
Health Department-Hood River & Clackamas Counties
Hood River County Forestry Department
Local Service Districts (fire, water, parks, etc.)

FOREWORD

This document contains the recommended Mt. Hood Interagency Plan and Alternatives. Altogether, it represents a course of action for dealing with land use problems and needs within the Mt. Hood area, a region important to the Nation and State of Oregon. Each alternative has an environmental assessment in which impacts are addressed and the mountain's carrying capacity is considered.

On June 11, 1973 a declaration of cooperative intent was signed by agencies responsible for the area. This agreement provided a commitment of staff and funding to study and prepare a common framework for land use direction.

Three principal documents formed the basis for this unique effort: Multiple Use Planning for the Forest Service and Bureau of Land Management; Clackamas County's "Preliminary Plan - Mt. Hood Community"; and the "Hood River County Comprehensive Plan".

It has been three years now and much has happened in the meantime. An active citizen advisory committee has donated a great deal of time and effort in familiarizing themselves with the area, its problems and potential. They have maintained a continuing and sharp dialogue on issues of concern -- whether clearcutting, no growth, expanded sewage works or free-ranging dog populations-- providing valuable input to the staff and Executive Committee throughout the process. It has been a positive experience as a whole; a learning experience for the planning staff as well as the participating citizens.

The executive board, made up of key political and administrative representatives from the principal jurisdictions has pulled together as a team. Respective arenas of decision making--each a different ballgame--have become more familiar across the board. This committee has provided leadership and steady direction for the overall process. The Planning Team, composed of a multi-discipline, multi-agency staff, has been responsible for the development of information pertaining to land suitability and environmental capacity, reviewed 14 interim projects and prepared three major publications to inform and involve the public at large. This was all part of maintaining a tight schedule on the assignment to develop and recommend a comprehensive Mt. Hood Interagency Plan. The cooperative out-of-pocket budget has been less than \$30,000 for the three year period, a nominal project cost compared to other planning studies of similar magnitude and complexity.



Executive Committee



Citizen Advisors



Public



Planners

The proposed plan and alternatives described here are based on a thorough analysis of the land base, its characteristics and potential. A broad-based public participation effort was designed to bring major issues of public concern to the forefront and guide decision making towards a plan that best balances land capability with public needs and desires. Because the proposed plan deals more with land and resource allocation and not as much with specific problems, all issues cannot be resolved at this time. However, the draft plan contains valuable resource information, original research findings an environmental capacity analysis, broad direction for such sensitive issues as Highway 26, ski area development, sewage service, and a common format for collective land management within the area.

It is anticipated that the counties and federal agencies will honor their original commitments and take action that is decisive and compliments one another. For the counties, this means conducting public hearings to amend plans, supplementing and strengthening them with the portions of the inter-agency plan which best apply. For the federal agencies, it means a review process and then a decision on the proposed action through a final environmental statement process, all as required under the National Environmental Policy Act. (NEPA)

The respective decisions of the participating governments will then be packaged into one document, the Mt. Hood Interagency Plan. It will be the end result of an important effort to plan wisely for a unique regional resource, Mt. Hood.

The interagency structure must continue its high level of cooperation and coordination in implementing the plan. From here, steps taken will be largely a matter of citizen initiative, belief in the planning process and monitoring of government performance.

USDA, FOREST SERVICE; USDI, BUREAU OF LAND MANAGEMENT;
CLACKAMAS COUNTY; HOOD RIVER COUNTY, OREGON
ENVIRONMENTAL IMPACT STATEMENT

MT. HOOD PLANNING UNIT

INTERAGENCY LAND USE PLAN

Prepared in Accordance with
Section 102 (2) (c) of Public Law 91-190

SUMMARY SHEET

- | | | | | |
|------|---|-----|-------------|-----|
| I. | DRAFT | (X) | FINAL | () |
| II. | FOREST SERVICE, USDA; BUREAU OF LAND MANAGEMENT; USDI;
CLACKAMAS COUNTY, HOOD RIVER COUNTY, OREGON | | | |
| III. | ADMINISTRATIVE | (X) | LEGISLATIVE | () |
| IV. | BRIEF DESCRIPTION OF THE ACTION | | | |

This document contains the recommended Mt.Hood Interagency Plan and Alternatives. Altogether, it represents a course of action for dealing with land use problems and needs within the Mt. Hood area, a region important to the Nation and State of Oregon. Each alternative has an environmental assessment in which impacts are addressed and the mountain's carrying capacity is considered.

This proposed plan is oriented toward improving efficiency of land use in the area by concentrating development in areas already committed, providing adequate support services, increasing agricultural and timber productivity and maintaining the overall mountain area character. A balance of use is emphasized minimizing external costs of development upon the public. Thus, Highway 26 is proposed for improvement, but only to the extent required by the proposed use level.

Acreages allocated by land categories are as follows: environmental protection - 3600; wilderness and study areas - 47,500; dispersed recreation - 8700; developed recreation - 8400; scenic forest - 63,800; general forest - 13,300; farm - 3800; housing - 8800; and commercial, industrial and special sites-80. Geothermal hot water use would be permitted except in Wilderness or Wilderness Study Areas.

Sewage collection systems will need to be improved and expanded within compact, defined service areas. Total range in the population provision of the proposed plan is from 16,000 to 29,000 with two optional levels indicated. Alternative "level 1" provides a design potential of 16,000 to 21,000 and service commitments to the more established areas; "level 2" assumes an additional sewer services area on a future priority basis in Brightwood which shifts the potential upward to 20,000 to 29,000 population. Those community facilities and services needed to support the population would be provided.

V. ENVIRONMENTAL IMPACTS AND ADVERSE ENVIRONMENTAL EFFECTS

Environmental impacts displayed include physical, biological, social and economic aspects. The plan represents land uses which are compatible with the given environment.

Some adverse effects on the soil resources will occur through activities such as timber harvesting and development of housing and roads. Localized increases in runoff will occur with the installation of impervious surfaces. The visual character of some areas may be modified. Log hauling will increase traffic and noise near residential areas. Timber harvesting will affect wildlife species requiring snag habitat.

Wild trout angling opportunities will diminish. The increased population levels will lead to additional wildlife and fisheries harassment. The sensitive alpine biosere may be adversely impacted. Free ranging dogs and cats will increase resulting in harassment of wildlife.

Highway modifications would result in some adverse effects such as removal of some old growth timber presently viewed as scenic and removal of large quantities of rock and gravel material. Energy consumption would be increased. Geothermal development could have adverse effects depending on the extent of development. Construction of housing, commercial and industrial facilities as well as their supporting services will remove that acreage from further production of natural resources. Dust and noise pollution will occur.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Any alternative for nonsustainable uses and not consistent with land suitability was not considered.

ALTERNATIVE A

Perspective. The alternative to the proposed plan assumes a continuation of established planning directions and existing zoning patterns. Interagency coordination would be more limited. All suitable lands now designated for development would be built upon with the level of development controlled by available service. Existing forest-farmland areas would remain in production where acknowledged in present plans.

Assuming an urbanized services level, Highway 26 would have to be an expanded four lane facility from Brightwood to Rhododendron even though this may conflict with existing policies and scenic objectives.

There are no additional wilderness study areas proposed beyond those currently designated. Based on present zoning allocations and refined suitability data, the population provisions under this alternative could range up to 60,000 residents (seasonal and permanent), depending on available sewer services.

Many elements of environmental capacity could be significantly compromised.

ALTERNATIVE B

Perspective. This alternative to the proposed action reflects the concern of the communities and persons desiring to retain the area much as it is now. It recognizes the need for some additional growth and improved sewage collection in existing areas. Additional lands for wilderness study and maintenance of farms and large undisturbed forest areas are also stressed. Highway 26 is indicated for limited improvements, but basically maintaining the existing facility. The design population level under this alterantive would be 12,000 to 16,000 residents, seasonal and year around.

VII. LIST OF AGENCIES AND ORGANIZATIONS TO WHOM THE DRAFT EIS WILL BE SENT

FEDERAL

- Advisory Council on Historic Preservation
- Department of Agriculture
 - Agricultural Research Service
 - Agricultural Stabilization and Conservation Service
 - Office of Equal Opportunity
 - Soil Conservation Service
- Department of Commerce
 - Economic Development Administration
 - National Marine Fisheries Service
 - National Oceanic and Atmospheric Administration
- Department of Defense
 - Army Corps of Engineers
 - 13th Coast Guard District
- Department of Health, Education and Welfare
- Department of Housing and Urban Development
- Department of the Interior
 - Bonneville Power Administration
 - Bureau of Land Management
- Department of Transportation
- Environmental Protection Agency
- Federal Energy Administration
- Federal Highway Administration
- Federal Power Commission
- Pacific Northwest River Basins Commission
- Subcommittee on Public Lands - U.S. House of Representatives
- Water Resources Council

STATE

- Department of Fish and Wildlife
- Land Construction and Development Commission
- Local Government Relations Division (For Distribution to all State Agencies)
- Oregon Historical Society
- Oregon State University
- Portland State University
- State Historic Preservation Officer
- University of Oregon

COUNTY

- Association of O&C Counties
- Association of Oregon Counties
- Clackamas County Commissioners
- Clackamas County Planning Commission
- Clackamas County Planning Department
- Hood River County Commissioners
- Hood River Planning Department
- Multnomah County Commission
- Multnomah County Division of Planning and Development
- Multnomah County Planning Commission
- Rural Area Development Commission

PRIVATE

- BLM - Salem District Advisory Board
- Citizen Groups and Individuals
- County College and University Libraries
- Mt. Hood Planning Unit Citizen Advisory Committee
- U.S. Senators and Representatives (Oregon)

LOCAL AGENCIES

- Columbia Region Association of Governments
- Metropolitan Boundary Commission

VIII. DATE DRAFT STATEMENT AND FINAL STATEMENT MADE AVAILABLE TO COUNCIL ON ENVIRONMENTAL QUALITY AND THE PUBLIC

Draft: MAR 1 1976

Final:

MT. HOOD INTERAGENCY PLAN
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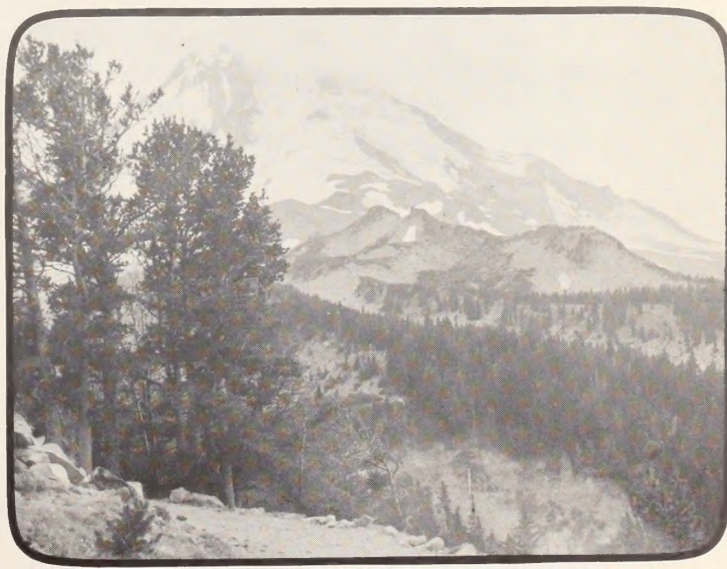
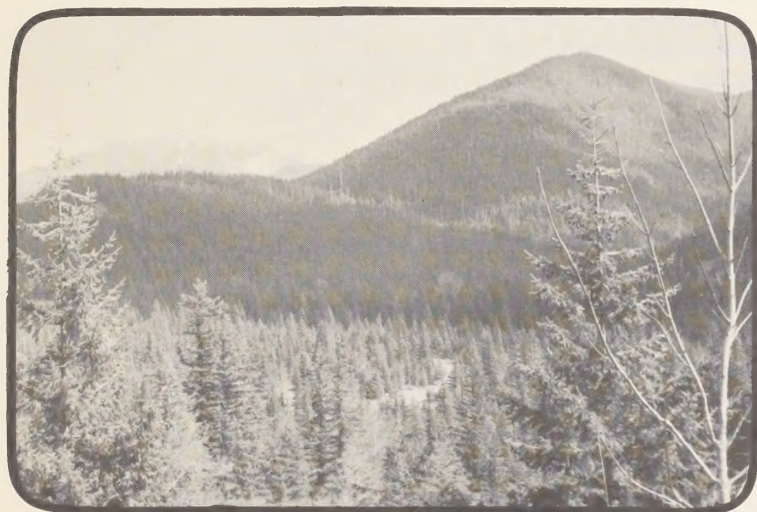
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INTRODUCTION

PURPOSE AND INTERAGENCY CONCEPT

The Mt. Hood Planning Unit is 250 square miles of sprawling green forest, productive fruit orchards, small mountain communities, and open recreation country; a region managed by Clackamas and Hood River counties, the State of Oregon, and the U.S. Forest Service and Bureau of Land Management.

Snowcapped Mt. Hood is the focus of the planning unit. One million visitors use the area annually. Hiking, skiing, fishing or driving for pleasure on the scenic Mt. Hood Loop are major recreation activities. Seven thousand people reside in the area, either on a seasonal or year round basis; vacationing, retiring, farming, logging or otherwise earning a living. The only problem is: all these people do not agree on the future use of the Mt. Hood Area; nor do the various governmental agencies. Some of these differences are understandable but the result has been a lot of cross-purpose planning.

In an effort to better coordinate land use policy and direction for the mountain area, an agreement was signed on June 11, 1973 at Timberline Lodge organizing a cooperative, multi-agency planning program. It was called the Mt. Hood Interagency Planning Team; in short, HOOD/INPUT.

The basic concept of HOOD/INPUT is a simple one: A group of agencies working together to integrate and build upon former plans and studies; and to resolve conflicting demands and interests upon the Mt. Hood environment. In short, planning together rather than piecemeal for Mt. Hood as a whole. The overall purpose is to develop a Mt. Hood Interagency Plan.

The Mt. Hood Interagency Plan is intended to be:

Specific. In designating where, what kind, and how much facility is needed to handle the eventual land use activity -- whether tents, cabins, or condominiums.

Decisive. In providing landowners and public agencies with a common frame of reference, one which does not compromise principles or lead to a drawn-out planning process.

Decision Process

The responsibility for adopting the plan rests with the individual counties and two federal agencies. Decisions on the portions applying to private lands will be made only after public hearings on both the Planning Commission and Board of County Commissioners levels as provided under state law. Decisions for the federally administered lands will be made following the filing of a final Environmental Impact Statement. The decisions will be binding on all lands within the Mt. Hood Planning Unit when these procedures are completed.

Implementation

The responsibility for plan implementation will rest with the agency with management authority or jurisdiction over the lands within the planning unit. Following plan adoption, the counties will develop necessary supporting ordinances.

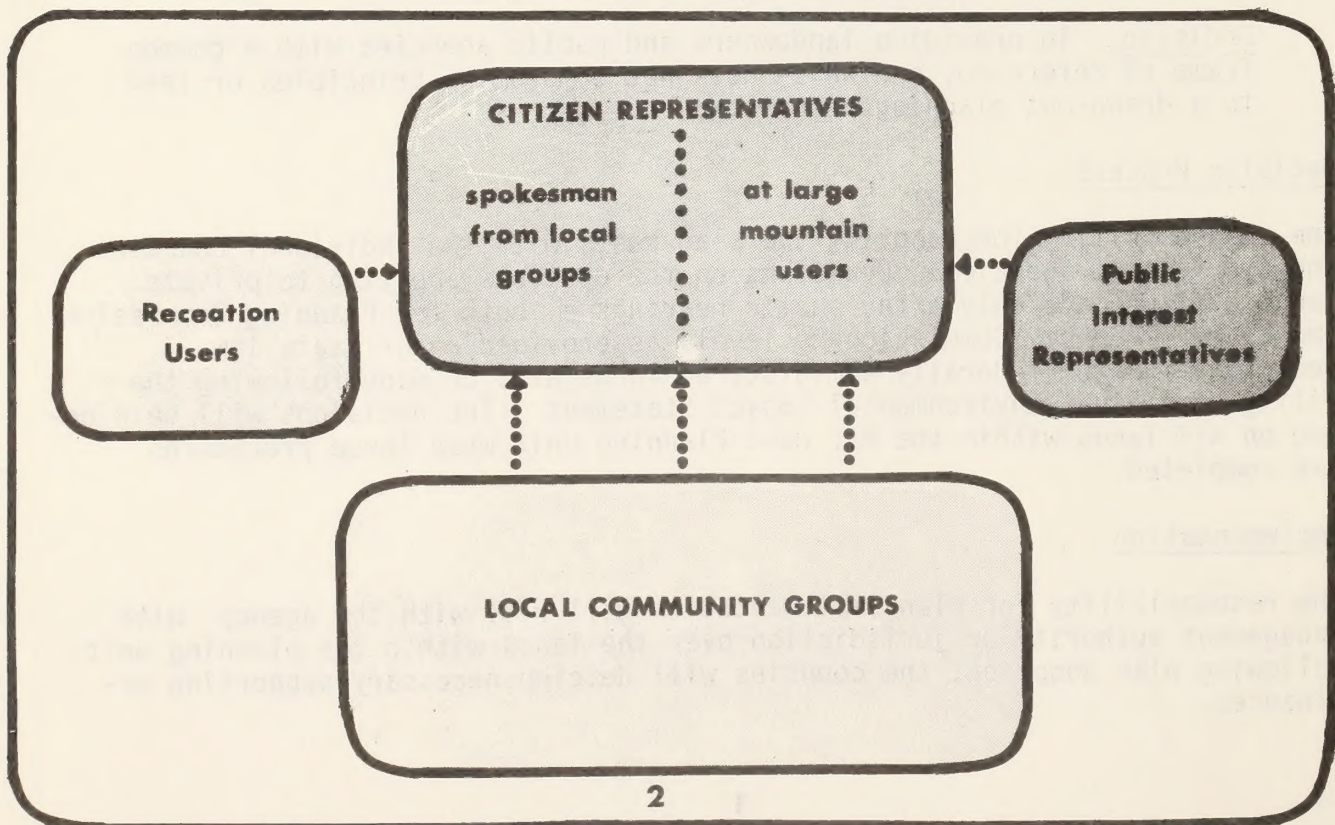
To insure that the implementation of plans is orderly and coordinated, the principal agencies involved (Clackamas County, Hood River County, and The Bureau of Land Management, Mt. Hood National Forest, State Forestry Department, State Department of Transportation, Mid-Columbia Economic Development District and Columbia Region Association of Governments) will name the representatives to an interagency planning council. This council will have responsibility to review ongoing activities, make recommendations for planning needs and keep the citizens aware of progress of activities underway and new projects being planned.

Citizen participation will be encouraged. The Mountain Area Advisory Citizens Committee should be appointed by the councils to monitor plan implementation, coordinate citizen initiatives, provide a common communication forum, and advise on major issues or planned amendment proposals which affect more than one private community or involve any public lands within the planning unit. Representation will be cross sectional and will include delegates from recognized local community groups and membership on an at-large basis selected by the planning council to represent the public interests or mountain user sector. Meetings will be held as frequently as necessary, and will be advertised and open to the general public.

The overall adopted plan is to be reviewed and revised every five years. Planned amendment proposals in the public interest will be considered once a year by the respective planning authorities in coordination with other Interagency participants.

The process for ongoing technical reviews of significant proposals within the planning unit will continue. The council will name a person to serve as planning coordinator for the planning unit. The agency requesting a technical review will then notify the coordinator who will be responsible for organizing and forwarding a report of findings and recommendations to the responsible agency. This coordinator will be fully responsible for arrangements for council meetings, scheduling of agendas and other related staff assignments by the council.

MOUNTAIN ADVISORY COMMITTEE

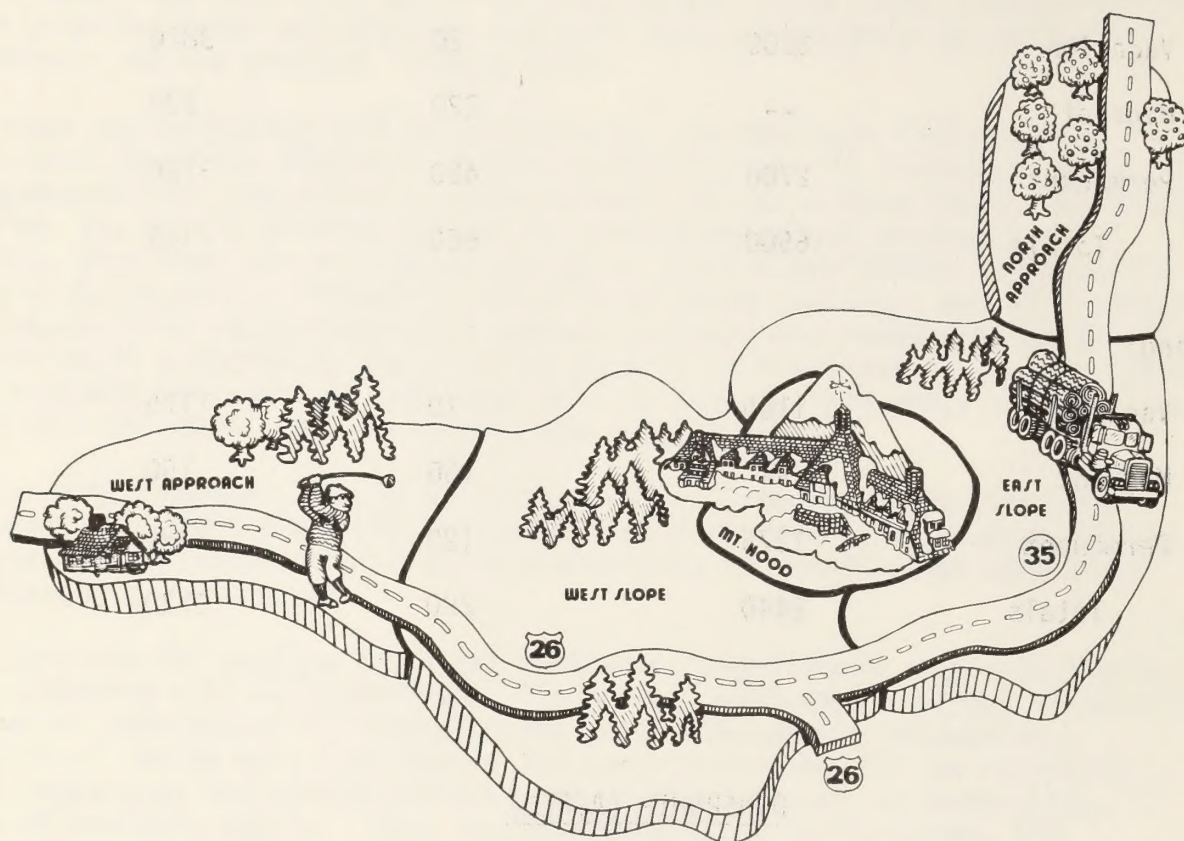


POPULATION AND HOUSING

	West Side Clackamas Co.	East Side Hood River Co.	Totals
Population:			
Vacation	3800	20	3820
Migrant	--	220	220
Permanent	2700	420	3120
Totals	6500	660	7160
Housing:			
Vacation	1165	10	1175
Migrant	--	150	150
Permanent	1275	120	1395
Totals	2440	280	2720

OWNERSHIP (ACRES)

National Forest	120,700
Private	27,900
Bureau of Land Management	5,300
Clackamas County	1,700
Hood River County	1,700
State of Oregon	700
Total	158,000



The Mt. Hood Planning Unit reflects a diversity of ownerships, geography, topography and a complexity of local, regional and national issues. The main physical feature, of course, is Mt. Hood proper, rising 11,235 feet above sea level. This is the highest peak in Oregon. The planning unit encompasses about 158,000 acres and extends from Cherryville to Parkdale, including portions of both Clackamas and Hood River Counties in Oregon. A thread running the length of the planning unit and an issue in itself is the scenic Mt. Hood Loop, Highways 26 and 35. Within the boundaries of the planning unit are the small communities of Brightwood, Wemme, Zigzag, Rhododendron, Government Camp and Parkdale. The Mt. Hood Wilderness and the Mt. Hood and Zigzag Mountain Study Areas are also located in the unit.

Taking a closer look, differences between areas within the unit boundary become more apparent. The planning unit has been divided into five areas or subunits to better show these differences. Descriptions of the subunits are as follows (from west to east):

WEST APPROACH



This portion of the planning unit extends from Cherryville to Zigzag. Compared to the other subunits, this one is the most easily accessed from Portland and consequently faces urbanization, more so than any other portion of the unit. Signs of urbanization are already in evidence, such as commercial development along Highway 26, pressures for sewers and improved water systems, commuting residents and permitted densities of an urban character and lot size. Thousands of subdivision lots, many undeveloped, lace the Sandy River Valley floor. This area today is still an attractive mountain corridor, an "approach" to the forested slopes of Mt. Hood.

This subunit includes a sizable amount of private land under Clackamas County jurisdiction, but is intermixed with public lands. Some of the lowest elevation lands in the planning unit are found here, lying adjacent to the Sandy and Salmon Rivers. Productive forest lands slope upward to major ridgelines on both the north and south. Bowman's Resort is a popular summer use area with a public golf course and is a gateway to the Salmon River area. A large public park and picnic area administered by the Bureau of Land Management is located at Wildwood.

THE WEST SLOPE

This subunit includes the western lower slopes and foothills of Mt. Hood. Principal physical features are the rugged Zigzag Mountain area, the Still Creek drainage, Lolo Pass and Trillium Lake.

The majority of land in this area is public land administered by the Mt. Hood National Forest. Small islands of privately owned land at Rhododendron and Government Camp are located within the National Forest. The Forest Service leases over 500 summer home sites between Zigzag and Laurel Hill.

Commercial facilities are located at Rhododendron and Government Camp.

This area is popular for both summer and winter outdoor recreation.

Winter attractions include downhill and cross-country skiing, snowshoeing, snowmobiling and snowplay. Multotorpor, Ski Bowl and Summit are areas that provide facilities for downhill skiing, and Snow Bunny Lodge offers facilities for snowplay. Summer attractions include trails for backpacking, fishing, horseback riding, trail biking, etc. Summer use is concentrated in areas like Ramona Falls, McNeil Campground, Trillium Lake and Mirror Lake. The Pacific Crest National Scenic Trail passes through this subunit.

A large portion of this subunit has the potential for wilderness and is to be studied for its wilderness suitability. Timber harvesting, although it does not occur throughout the subunit, is an important activity. Most of the logging has taken place in the Lolo Pass area and Still Creek drainage.







This subunit encompasses the glacial carved, snowcapped face of the mountain proper at and above timber line. As a hostile but fragile alpine zone, it includes land from 6,000 feet elevation on up to the summit.

All land in this subunit is public and administered by the U.S. Forest Service. About half of the area is a classified Wilderness Area, with the balance either uncommitted or under the special use permits of Timberline Lodge and Mt. Hood Meadows ski areas. Timberline Lodge, constructed during the 1930s, has been acclaimed as a National Historic Site and currently operates as a hotel and public ski area. A 30 year management plan for the Timberline Lodge complex is presently being determined. Cloud Cap Inn on the north face is also a National Historic Site, but is not as well known nor as spectacular in scale as Timberline Lodge.

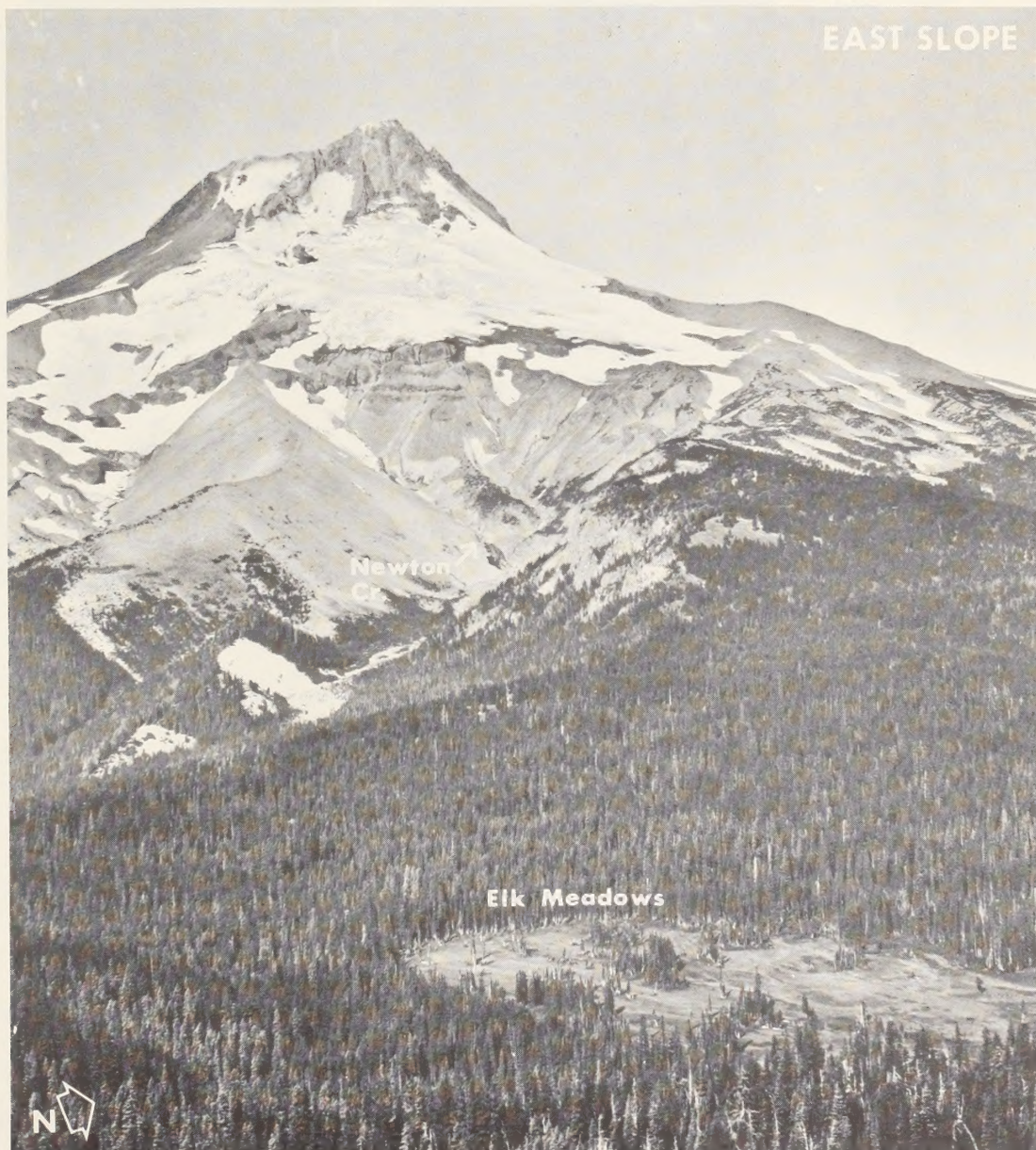
The mountain affords magnificent views of the lower countryside and other Cascadian mountains, including Mt. St. Helens, Mt. Adams and Mt. Jefferson, to name a few. The alpine character of the mountain and spectacular views make it a popular area for both summer and winter outdoor recreation. Winter recreation is mainly centered around downhill skiing at Timberline Lodge and Mt. Hood Meadows. Summer recreation activities include day hiking and backpacking. Mountain climbing is a very popular year-round activity.

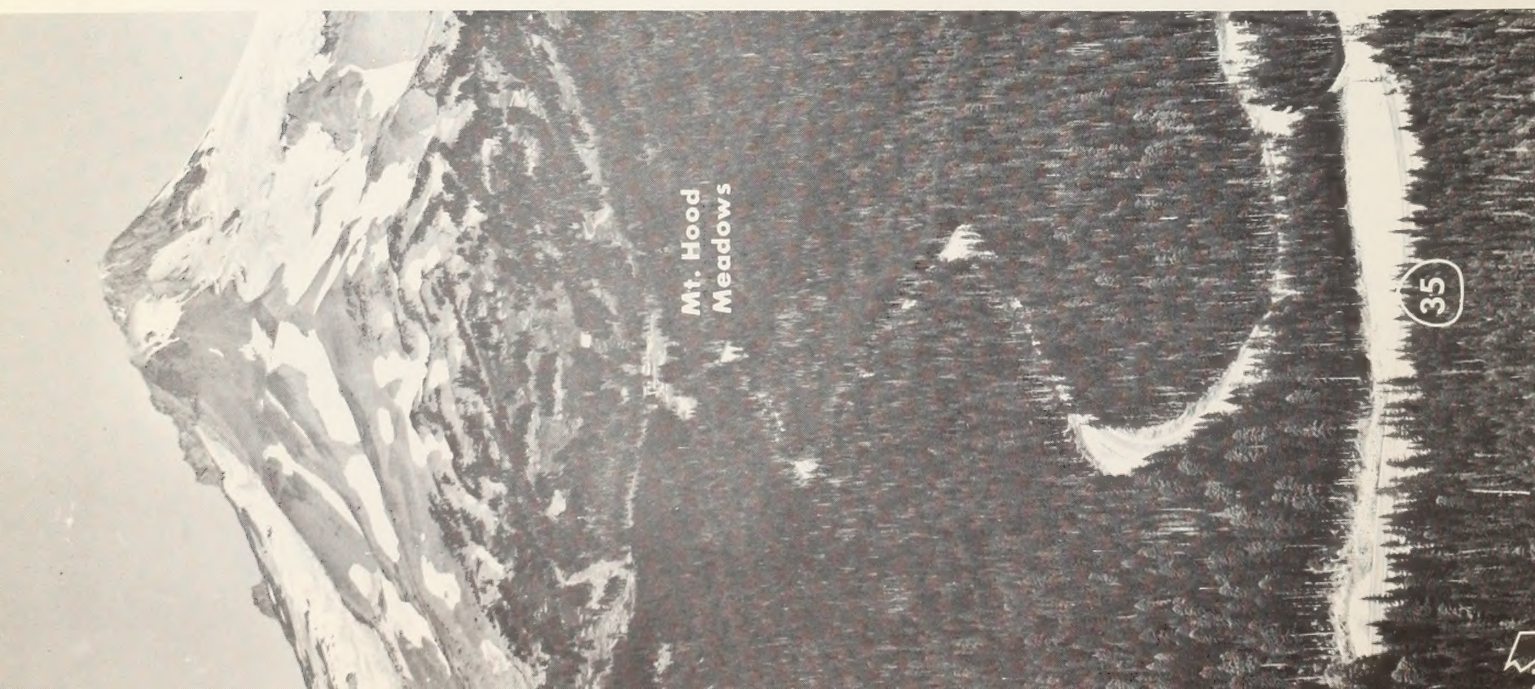
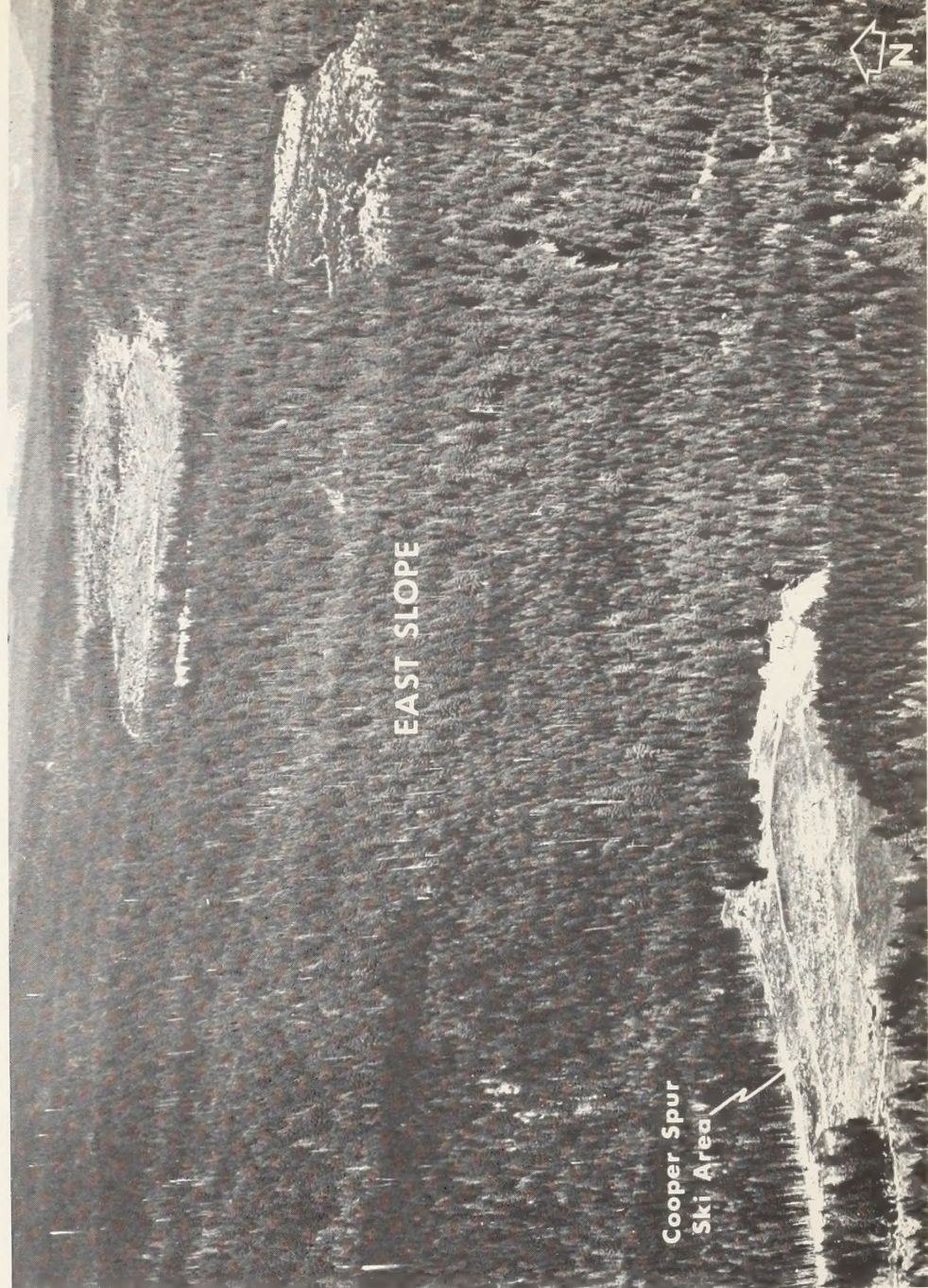
EAST SLOPE

The eastern lower slopes of Mt. Hood make up this subunit. Weather conditions in this area tend to be somewhat more stable with less precipitation than on the west side; however, heavy snowfall is common throughout the subunit. Bluegrass Ridge, Elk Meadows, Hood River Meadows, White and Hood River drainages are prominent physical features. Highway 35 runs through the area, accessing main activity areas. Most lands are administered by the U.S. Forest Service, but some county ownerships (Hood River) exist within this subunit.

Major land use activities include outdoor recreation and timber harvesting. Commercial logging is an ongoing activity and provides a substantial source of county revenue. Although this area is less accessible to Portland, it is becoming increasingly popular for both summer and winter recreation. Downhill ski facilities are located at Mt. Hood Meadows and Cooper Spur. Other winter sports include snow hiking, snowmobiling and cross-country skiing. Several campgrounds and trails offer summer recreation opportunities.

A portion of this subunit is to be studied for its wilderness suitability.





NORTH APPROACH

The upper Hood River Valley forms the "North Approach" into the planning unit. Although it is 1½-2 hours from Portland and behind the west approach in terms of development pressure, it is still experiencing growing pains. The communities of Parkdale and Mt. Hood are located here. The majority of land is privately owned under the home-rule jurisdiction of Hood River County, with the remaining lands administered by the state, county, U.S. Forest Service and Bureau of Land Management.

Fruit orcharding and timber production are the major land uses and economic and employment mainstays of the area. The climate, favorable air drainage and good management of suitable agricultural soils have resulted in scenic and productive orchard areas. Agricultural products (apples, pears) are processed at Diamond Fruit Company in Parkdale. The subunit receives a seasonal influx of migrant labor which creates an important housing concern.

Highway 35, running the length of the subunit, provides a major route for movement of goods to the lower Hood River Valley as well as to other parts of the planning unit. Scenic driving is a popular activity along this route in the spring, summer and fall. In winter, Highway 35 provides a route for outdoor recreationists, particularly skiers to Mt. Hood Meadows and Cooper Spur.

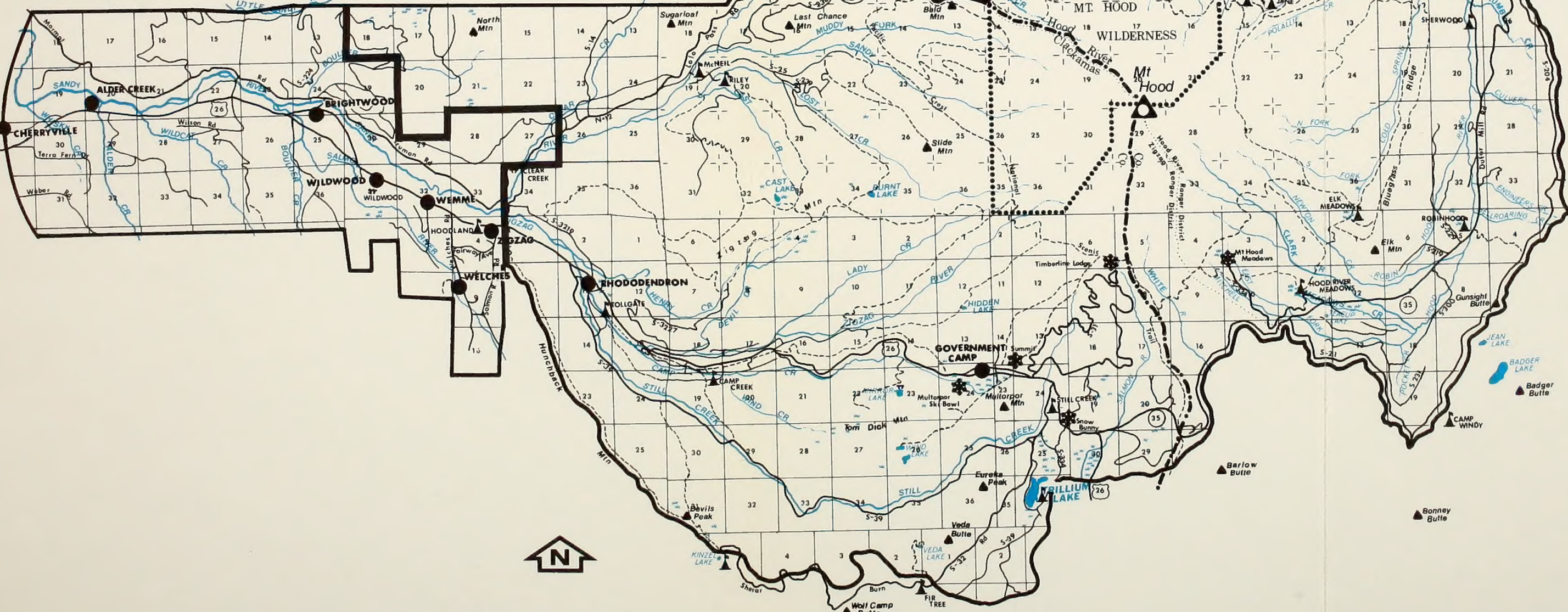


MT. HOOD PLANNING UNIT

MAP 2

- Primary Road
- Secondary Road
- U.S. Highway
- State Highway
- Forest Service Road
- Trail
- Campground
- Picnic Area
- Winter Sports Area

- Boundaries
- Planning Unit
 - Wilderness
 - County
 - National Forest



REGIONAL PLANNING SETTING

The Mt. Hood Interagency Planning Study has occurred within a whole statewide and regional planning framework. The 1973 State Legislature passed Senate Bill 100, known as the State Land Use Planning Bill. This Act created the State Land Conservation and Development Commission (LCDC), whose members are appointed by the Governor. LCDC has the responsibility to administer statewide goals and guidelines for land use (see page 19), develop a permit system for activities of statewide concern, review and recommend to the legislature areas of critical concern, and review comprehensive plan for conformance to state goals and guidelines.

Also, during the 1973 legislative session, Senate Bill 769, the CRAG Bill, was passed. This bill established the Columbia Region Association of Governments (CRAG) as the regional planning authority for the Portland metropolitan area (Washington, Clackamas, Multnomah Counties). CRAG has the responsibilities of preparing and maintaining a plan for the region in accordance with state goals and objectives; designate areas and activities of regional impact and establish regulations for development and use of such areas and activities; review comprehensive plans now in effect or subsequently adopted by the member jurisdictions and assure conformance with state goals and objectives.

On the local level, there are adopted county plans that apply directly to the area -- the Clackamas County Comprehensive Plan and the Hood River County Comprehensive Plan. Also, Clackamas County has adopted the "Preliminary Plan -- Mt. Hood Community," which applies specifically to the Highway 26 corridor in the planning unit (see page 16 for description of these plans). Completion of the preliminary plan is to be achieved through cooperative interagency participation in the Mt. Hood Planning Unit which, from the county's viewpoint, means a continuation and refinement of the plan, particularly in areas of density (environmental capacity), planning for essential services (sewer, water), transportation and more effective coordination among agencies responsible for planning and administration in the area. Once land use policy for the area has been adopted by the main participants, the preliminary plan for the corridor would be amended, and expanded in scope so that there is integration and consensus of direction.

Hood River County is now embarking upon a complete update of its comprehensive plan which will be based on the goals and guidelines developed by LCDC. The county will develop the update through local area plans, the first of which is the Mt. Hood Planning Unit. These area plans are designed to update and refine the existing comprehensive plan.

Areas adjacent to the planning unit are also in various stages of land use planning. To the west of the planning unit, a federally funded community planning program for the Damascus, Boring, Sandy and Firwood area is underway conducted by Clackamas County. The plan for this area will be coordinated with the Mt. Hood Plan. The Forest Service is involved in planning for the several planning units that border the Mt. Hood Unit. To the north, a proposed plan for the Bull Run Planning Unit has been developed and will be presented in a draft environmental statement in winter 1975. Planning for the Lava and White River Planning Units has not yet begun. A plan for the East

Hood River Planning Unit has been developed and an environmental analysis of this plan will be prepared in 1976. The proposed plan presented herein is complimentary to the adopted plans for The Dalles Watershed and Salmon River Planning Units. For the Huckleberry Planning Unit, the NEPA process has been completed and a management plan will be announced this winter. The decision on this plan will consider the proposed plan for the Mt. Hood Unit. Finally, a draft environmental statement outlining a proposed management land use plan for the Badger-Jordan Planning Unit will be distributed in early 1976.

ADJACENT PLANNING UNITS MAP 3



PLANNING PROCESS

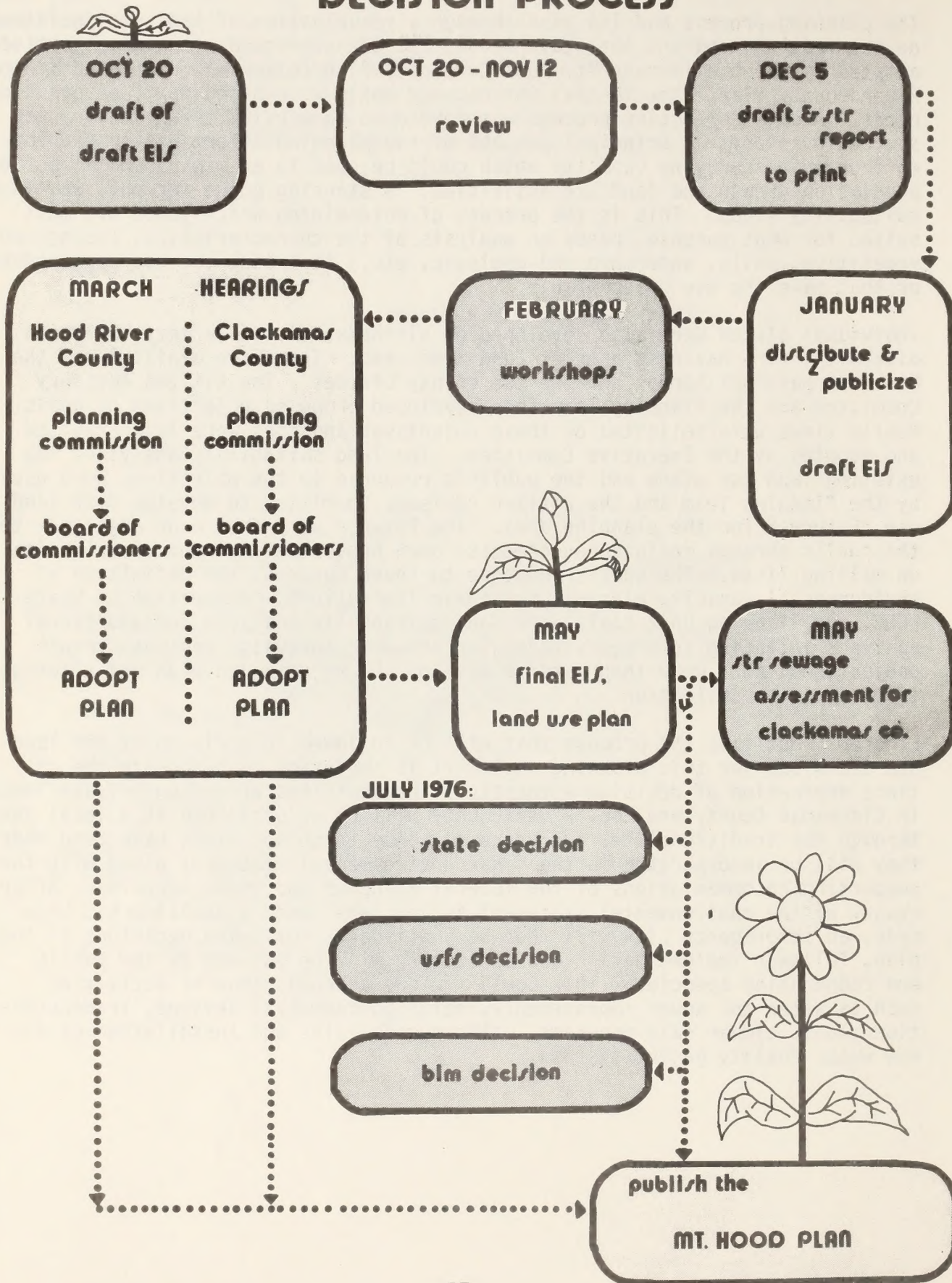
The planning process had its base through a reevaluation of land use decisions on the federal land and the state lands, and the expressed planning objectives adopted by the preliminary Mt. Hood Community Plan (Clackamas County) and Hood River County Plan. The initial interagency goals were based on these planning needs. A data collection process was developed to provide the necessary resource inventory. A principal purpose of the planning effort was to develop environmental carrying capacity which could be used in examining and directing population growth and land use activities. A starting point for this was land suitability study. This is the process of determining which lands are most suited for what purpose, based on analysis of the characteristics, (topographic, vegetative, soils, watershed and geologic, etc.) that make the use appropriate or that make the use unacceptable.

Individual plates were also developed on airsheds, visual variety, wildlife diversity, fire hazards, present land uses, etc. These are available at the Mt. Hood National Forest and the two county offices. The Citizen Advisory Committee and the Planning Team then developed proposed objectives or goals. Public views were solicited on these objectives and they were later revised and adopted by the Executive Committee. The land suitability analysis, the existing land use plans and the public's response to the objectives were used by the Planning Team and the Citizen Advisory Committee to develop four land use "Futures" for the planning area. The Futures were then made available to the public through media announcements, open house meetings and distribution on mailing lists. The public response to these Futures, the definition of environmental capacity elements and their limitations, recognition of State LCDC, the Planning Unit goals, the land suitability analysis and additional analyses including sewerage studies, an economic analysis, regional growth projections, etc. were then used to develop the recommended plan and alternatives in this publication.

Figure 1 outlines the process that will be followed in arriving at the land use decisions for this planning unit. It is important to recognize the distinct separation of decision authority. The decisions affecting private lands in Clackamas County and Hood River County will be accomplished at a local level through the traditional hearing process. Once these decisions have been made, they will be incorporated in the final environmental statement along with the supporting recommendations of the federal agencies and state agencies. After review of the environmental statement is complete and a decision has been made, an interagency plan will then be published. Following decisions on the plan, followup implementation and monitoring will be pursued by the public and cooperating agencies. This could include a broad range of activities such as water and sewer improvements, detailed community designs, transportation plans, timber sale programs, wilderness studies and installation of air and water quality gaging systems.

FIG. 1

DECISION PROCESS



EXISTING PLANS

Federal Agencies

Forest Service. The Mt. Hood National Forest has two district multiple use plans covering National Forest land in this planning unit. The area west of Mt. Hood is included in the Zigzag Ranger District Multiple Use Plan and the eastside is included in the Hood River Ranger District Plan. They represent a collective effort of the past rangers, their staff and representatives of the local public in developing a plan which provides directions to their ongoing activities. The resource data used for these plans included existing surveys and local experience of the Forest Staff. There are additional functional plans which are based on these decisions. These include transportation plans, timber management plans and recreation plans.

The principal weaknesses in these plans are (1) the plans were not based on a systematic interdisciplinary approach to developing land use suitability, (2) the plans did not involve a thorough testing of alternatives and (3) the public and other agency participation in the process was negligible.

BLM. The Cascade Area Management Framework Plan of 1971 covers BLM land in the unit. It is a multiple use plan describing resource uses and activities on BLM land. The plan was developed in a similar manner as Forest Service Multiple Use Plans. However, the district held a series of hearings throughout the section of the state to receive public comment. Other than the public involvement process, the plan has similar weaknesses to the National Forest Plans. The Mt. Hood Interagency process has resolved these principal differences.

State Plans

State Forestry Department. The State Forestry Department has a Forest Resource and Timber Management Plan and State Forest Practices Act. The Plan covers all state lands to be used for timber production. It describes existing timber resources and the type of management activities to occur. This plan also has similar weaknesses to the federal plans in terms of data collection and plan preparation. The emphasis of this plan by the nature of the properties covered, deals primarily with timber management. The State Forest Practices Act is the chief implementing ordinance as it applies to private land.

County Plans

Clackamas County. There is an adopted community plan ("Preliminary Plan -- Mt. Hood Community") which applies to the private land area extending from Cherryville to the county line east of Government Camp. Issues and problems within the area are addressed with the goal of assuring continued environmental quality. Key provisions and policies include: standards for hillside conservation, planned developments, scenic highway designations, stream buffering* and setbacks for all new development, grouped and more compact business centers, marshland* preservation, protection of historic sites and major open spaces and impact review of all significant development proposals.

The plan represents a departure from previous efforts to administer land use in the private corridor, establishing improved guidance, standards and priorities for development, along with some strong resource protection objectives. Issues such as the development of sewage facilities and housing densities were left somewhat open-ended, to be further studied in relation to the mountain's environmental carrying capacity. In addition, greater depth was needed to insure coordination in the long term management of Mt. Hood's private and public lands, each highly dependent upon one another, environmentally as well as economically. Implementation and refinement of the Clackamas County's community plan included participation in the interagency planning program.

Hood River County Comprehensive Plan. Hood River County adopted its Comprehensive Plan in the fall of 1973 after a three year effort which included preparation by a planning consultant and considerable public participation. The plan lists specific objectives relating to forest, farm, residential, commercial and industrial land use. In addition, policies and standards are outlined for the same land use activities.

Traffic circulation standards are analyzed and specific recommendations are made for vehicular transportation routes. Recreation facilities, schools and other public facilities and housing are analyzed and recommendations made. The greatest shortcomings of the plan is lack of backup data and coordination between the land use plans and public facility elements.

*See Glossary

INTERAGENCY PARTICIPATION

When the interagency process for a land use planning study for the Mt. Hood Unit was established, the objective was to provide a method whereby the many agencies with jurisdictions in the area could integrate existing and future plans and provide a process for communication on decisions affecting the whole area.

The interagency framework has provided an avenue of communication and cooperation among the agencies. Where formerly individual agencies operated somewhat in a vacuum, there is now improved understanding and knowledge of each other's problems, plans, projects and potentials within the unit. Since many things that happen within the unit affect more than one jurisdiction (i.e. the highway), it is recognized that there must be some cross-communication between agency decision makers.

Because of the complexity and size of the Mt. Hood Area, land use planning could not have been accomplished by one agency alone. A plan is only good if it can be carried out. Seeing that all concerns were addressed required communication from all involved and a commitment toward implementation. The whole planning process has been working toward this goal.

The planning process has involved a number of different agencies other than those who signed the cooperative agreement. Such agencies as the Portland Metropolitan Area Boundary Commission, Department of Environmental Quality, State Engineer's Office, Oregon Department of Fish and Wildlife and many others have provided data, information, review and comments at many stages in the study. Special reports prepared by some of these agencies for the study are listed in the Appendix.

The technical interagency reviews of proposed projects have provided decision-making agencies opportunities for expertise that may not otherwise have been available; and review and comments from a number of different viewpoints, thus broadening the scope of input into decisions. The continuation of this service will provide agency decision-makers future opportunities for communication and comment. The interagency framework has recognized and made visible the interrelationships and a more complete picture of affects of land use decisions in the Mt. Hood area.

PLANNING GOALS

STATEWIDE GOALS

The goals of the State of Oregon Land Conservation and Development Commission which follow are an important part of the goals setting process for the Mt. Hood Planning Unit.

Citizen Involvement - To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

Land Use Planning - To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions. City, county, state and federal agency and special district plans and actions related to land use shall be consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS 197.705 through 197.795.

Agricultural Lands - To preserve and maintain agricultural lands.

Forest Lands - To conserve forest lands for forest uses.

Open Spaces, Scenic and Historic Areas and Natural Resources - To conserve open space and protect natural and scenic resources.

Air, Water and Land Resources Quality - To maintain and improve the quality of the air, water and land resources of the state.

Areas Subject to Natural Disasters and Hazards - To protect life and property from natural disasters and hazards.

Recreational Needs - To satisfy the recreational needs of the citizens of the state and visitors.

Economy of the State - To diversify and improve the economy of the state.

Housing - To provide for the housing needs of citizens of the state.

Public Facilities and Services - To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Transportation - To provide and encourage a safe, convenient and economic transportation system.

Energy Conservation - To conserve energy.

Urbanization - To provide for an orderly and efficient transition from rural to urban land use. Urban growth boundaries shall be established to identify and separate urbanizable land from rural land.

PLANNING UNIT GOALS

During the spring of 1974, the Citizens Advisory Committee (CAC), member agencies and the interagency planning team combined efforts to develop a set of proposed objectives (goals) for the Mt. Hood Planning Unit. These proposed goals were in the land suitability brochure distributed to the public from June to August 1974. The public was asked for their review and critique. A response form was provided for comments.

Based on the public input, the CAC and the planning team submitted recommendations to the Executive Committee as to which goals should be adopted. The Executive Committee reviewed the public input and the recommendations and agreed to the following goals for the Mt. Hood Planning Unit.

Guiding Premises

All goals are governed by the principle of protecting the mountain area as a unique resource and staying within its capacity for sustained use and enjoyment.

Land is a resource, not a commodity. No one special use will dominate.

Goals to Insure

A compatible variety of recreation opportunities.

Protection of the existing Mt. Hood Wilderness; provision of adequate wilderness land that meets wilderness criteria.

Retention of the unique visual character and scenic variety associated with the mountain landscape. Specifically avoid strip development along major access corridors.

Protection of all wetlands, streamsides, major river corridors and floodplains for natural, scenic and recreation purposes.

Identification and protection of significant historical and archaeological sites or structures (e.g. Timberline Lodge and Old Barlow Road, etc.)

Protection and provision of adequate habitat for wildlife species native to the area.

Conservation of land suitable for farming as a critical resource.

Protection of life and property subject to floods, landslides, fire and other natural hazards and disasters.

Development of energy and mineral resources will be compatible with environmental quality.

Provision for long term economic opportunities serving other planning goals.

Communities within the planning unit maintain individuality, physical separation and diversity of character as related to the mountain setting.

Provision for a balanced transportation system to serve area needs.

Provision for housing variety, adequate business opportunity and a coordinated arrangement of service facilities, consistent with environmental capacity.

Established business areas and areas previously subdivided and suitable for housing have priority for new development.

Effective plan implementation, including adequate funding. Agencies will work together in review, monitoring and enforcement of resulting policies, standards and ordinances.

Opportunities for citizen participation in the preparation, implementation and review of the Mt. Hood Interagency Plan.

Responsible timber management of suitable forest lands on a sustained yield basis.

Protection, maintenance and orderly restoration of air, water and soil qualities.

Maintenance of a long range supply of water for both consumptive and non-consumptive uses.

HISTORY

The history of the Mt. Hood Area is colorful, involved and very interesting. There are many books, articles and newspaper articles written on specific incidents concerned with the Mt. Hood Area. To recap them all would be much too lengthy for this document. Rather, what has been outlined are the significant items that affected the use and settlement of the area. A list of selected references is noted in the Appendix. Map 4 will aid the reader in locating many of the historical features.

Indians commonly came up the draws and streams and camped during the summer months. They primarily were there to pick berries, hunt game and gather products from the forest to use during the winter months.

Although the Lewis and Clark party described the Hood River area and Mt. Hood, they never ventured into the planning unit. First records of white men in the Mt. Hood area are of vague records of Hudson's Bay trappers during the time of Lewis and Clark.

The Barlow Road (1845) became the overland route on the Oregon Trail and went from The Dalles across the south side of Mt. Hood and on into Oregon City by way of Foster's Road. As a toll road, it served many thousands of emigrants and was eventually developed into a State Highway system with its primary purpose being for recreationist access.

Present day settlements in the Mt. Hood Planning Unit are found primarily along the Old Barlow Road route. Government Camp, Rhododendron and Alder Creek all sprang up as a result of the Barlow Road. On the eastside of the planning unit, communities such as Parkdale and Hood River developed because of the agriculture potential, nearby logging activities and the presence of the river itself.

The Mt. Hood Planning Unit was early used for the resources it provided -- water for irrigation, lumber for houses and grazing for sheep and cattle.

The improved Barlow Road and the completion of the Loop Highway in 1921 provided access for recreationists. Cloud Cap Inn on the mountain's northeast flank was built in 1889 and served for a number of years as a climbing center. Skiing, from the present location of Timberline Lodge, and the Mt. Hood Lodge began very early in the 1900s. Summer homes in the Zigzag Valley came also in the early 1900s and many of the original structures are still being used.

Some significant Dates in the Mt. Hood Area

1845	Barlow Road
1889	Cloud Cap Inn built
1921	Loop Highway opened
1926	Mt. Hood Recreation Area (84,000 acres)
1931	Mt. Hood Primitive Area (14,800 acres)
1937	Timberline Lodge dedicated
1958	Mt. Hood Highway improved (westside)
1964	Mt. Hood Wilderness (14,180 acres)
1973	Timberline Lodge placed on list of National Historic Register
1974	Cloud Cap Inn placed on list of National Historic Register

Historic and Archaeological Sites. (See Map 4 for location of sites.) The most recent listing of the National Register of Historic Places (Federal Register . . .) has been consulted in compliance with Section 106 of the National Historic Preservation Act of 1966. Two register sites are located within the planning unit: Timberline Lodge and Cloud Cap Inn.

Also within the unit is the Barlow Road segment of the proposed Oregon Trail route of the National Historic Trail System. (Department of Interior, Draft Environmental Statement, "Proposed Designation of the Oregon Trail System," Bureau of Outdoor Recreation, DES 75-76, June 1975.) The following sites along the Barlow Road route have been identified as unregistered historic sites: Barlow Pass, Pioneer Woman's Grave, Summit Meadows, Laurel Hill, Barlow Tollgate, the Rock Corral and Zigzag River Crossing near Rhododendron.

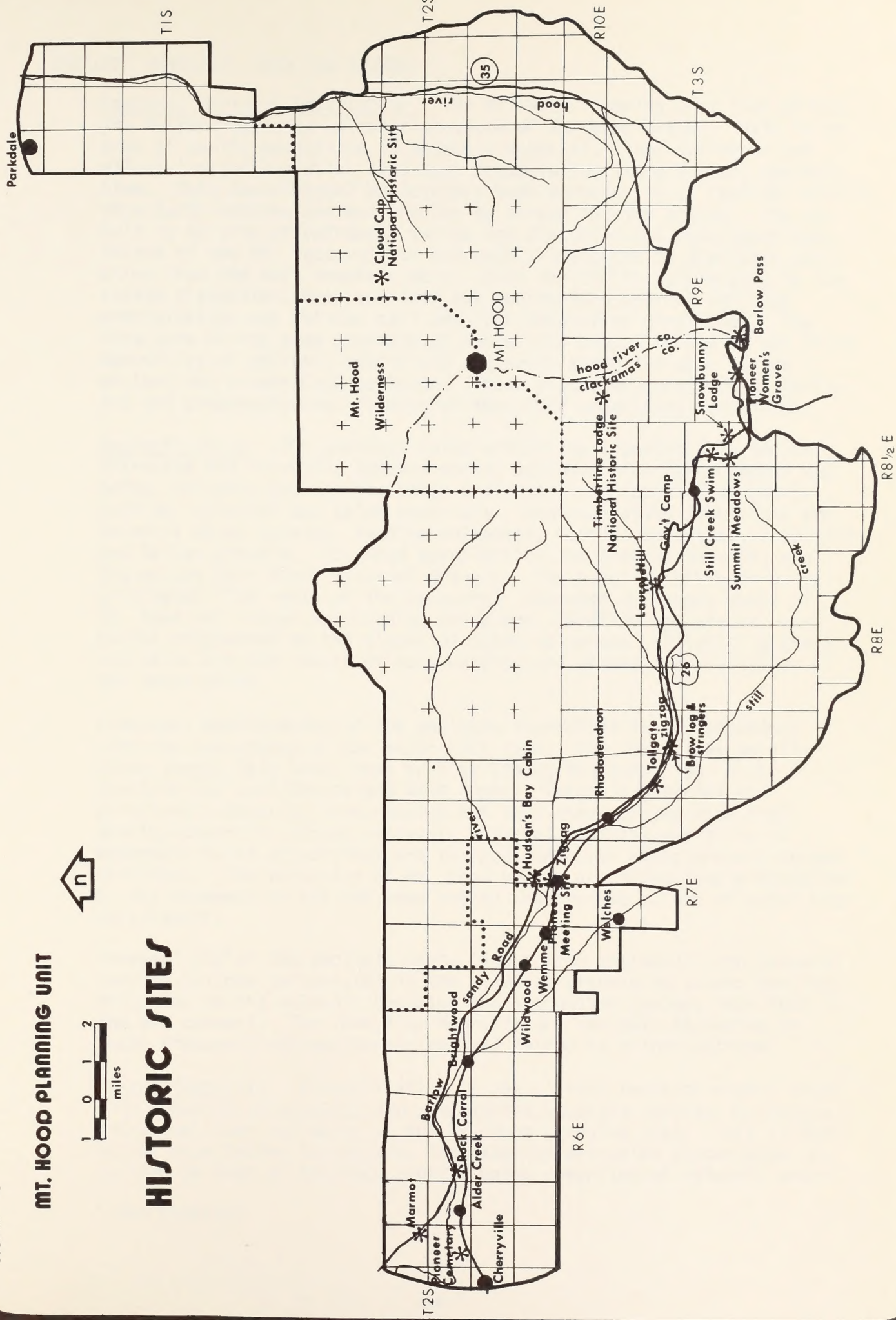
Other sites in the unit such as China Fill (Cloud Cap Road), Still Creek Swim, Snow Bunny Lodge, etc. will be investigated further to determine their historic significance.

MAP 4

MT. HOOD PLANNING UNIT



HISTORIC SITES



GEOLOGY, MINERALS, ROCK AND ENERGY

Regional Geologic Description. The Mt. Hood Planning Unit lies within the Western Cascades volcanic province of Northern Oregon. This is an area of cyclic deposition of volcanic material, flank sediments and alluvial materials which have been accumulating since Miocene geologic time. This depositional process has been accompanied by regional uplift, structural deformation and erosion by stream and ice action. The result is an area of extremely varied and discontinuous rock types dominated by the Mt. Hood volcano and deeply dissected by drainages radiating from the main mountain mass. Mass wasting* is accelerated by the stream dissection, weak volcanic and sedimentary bedrock and high precipitation and related soil and rock saturation conditions. The structure of the area consists of radial dip slopes* formed by the flank deposition of volcanic debris and sediments along the axis of the ancient and recent Cascade Range. These slopes are modified by faulting and predepositional folding of the older underlying formations.

Geologic Units. The geologic units within the planning unit include intrusive and extrusive igneous rocks; volcanic breccias, cinders and tuffs; volcanic and shallow water sediments; and deposits of glacial, mudflow, alluvial and talus materials. Representative formations are Columbia River basalts, Sardine volcanics, Cascade andesites, Troutdale and Dalles gravels, Mt. Hood pyroclastics and glacial outwash, and Zigzag and Hood River alluvial gravels. The majority of these units originated from vents of the ancestral Cascades or recent vents of Mt. Hood and lesser surrounding volcanoes. Mudflow and glacial deposits originated on the slopes of these volcanoes. Alluvial gravels and talus are the result of mass wasting and stream transportation of the above units.

Erosional modification of the geologic formations varies dependent upon the resistance of the major rock type. The lava flows usually cause steep, bold land forms such as Zigzag Mountain, Tom Dick Mountain and Last Chance and Bald Peaks. Volcanic breccias and pyroclastic deposits form rounded and less steep slopes with high density dendritic stream patterns. Glacial, mudflow and alluvial materials exist as moraines and terrace deposits along present stream drainages. The volcanics of Mt. Hood proper are being deeply dissected by the movement of ice and snow and by the erosive action of rapid snow melt runoff.

Permeability* of the geologic units ranges from extremely high (several hundred gallons per minute) in the alluvial gravels to values consistently low in the volcanic breccias and intrusives (values less than 10 gpm are common). The lava flow deposits are variable depending on joint frequency and weathering and may extend to either extreme.

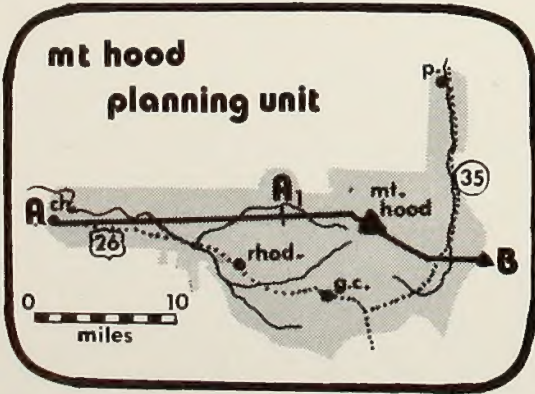
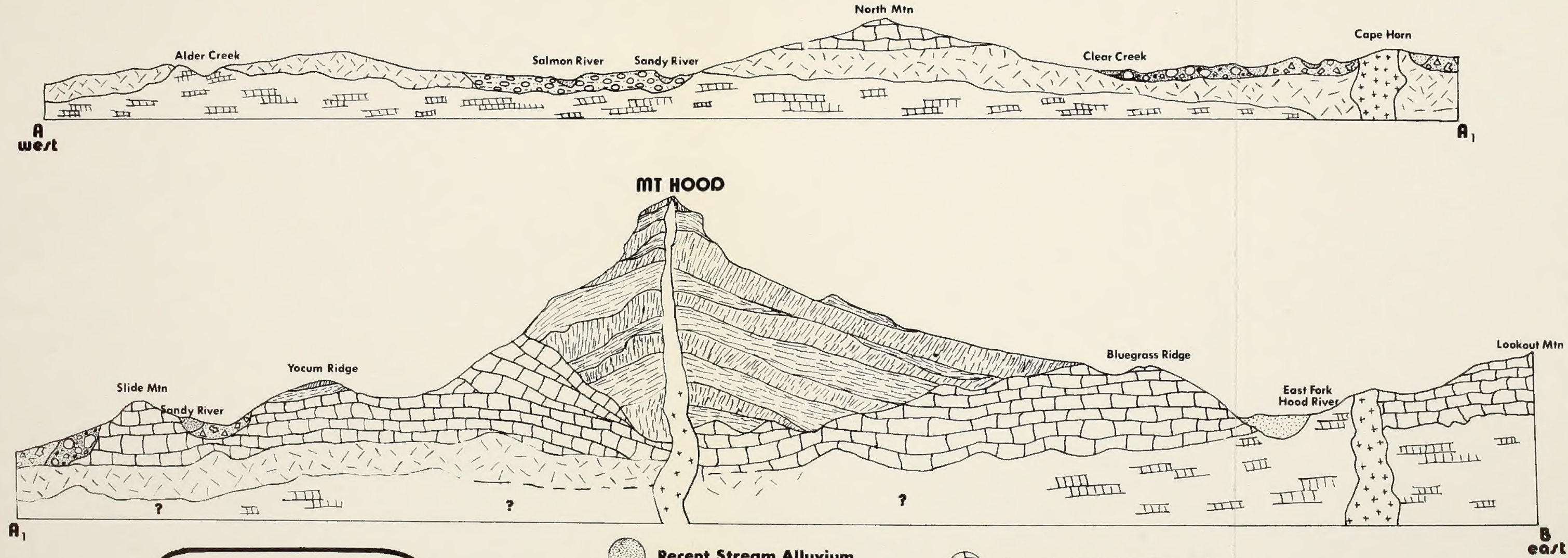
Mineral Deposits. Mineralization in the classic sense of highly economic deposits of metallic and nonmetallic minerals related to igneous intrusives does not occur in the Mt. Hood Planning Area. This is the normal expectation for an area dominated by extrusive volcanism resulting in most of the rock profile being comprised of volcanic sedi-

* See glossary

FIG. 2

GEOLOGIC STRUCTURE SECTION

Mt Hood Planning Unit



- | | | | |
|--|------------------------|--|--------------------------------|
| | Recent Stream Alluvium | | Cascade Andesites & Basalts |
| | Valley Terrace Gravels | | Rhododendron Formation |
| | Mud Flow Deposits | | Yakima (Columbia River) Basalt |
| | Glacial Deposits | | Intrusives |
| | Mt Hood Volcanics | | |

ments, breccias and flow rock. What intrusions do exist are small in size and not of the chemical composition normally associated with economic mineralization.

Metallic and Nonmetallic Mineralization. Deposits of metallic and non-metallic minerals within the planning area are confined to minor shows of cinnabar and other sulfides near the small intrusives. These have not been of sufficiently high grade to be worked on a commercial basis. There are presently no actively producing metallic or nonmetallic deposits in the planning unit and the potential for future discovery is considered extremely low.

Construction and Building Materials. Natural and crushed sand and gravel aggregate, riprap stone and building stone are produced in significant quantities within the planning unit. Sand and gravel pits are located in the alluvial and glacial deposits along the Sandy, Zigzag and White River drainages. Quarry operations are presently operating within the lava flows of both the Columbia River basalt and the Cascade andesite formations. These quarries produce several hundred thousand cubic yards of crushed rock annually.

A byproduct of crushing operations in some quarries is the production of oversize rock. This material is utilized for riprap protection of streambanks, earth embankments, road cutslopes and other structures requiring protection from erosion or weight loading.

An increasing demand for natural stone from the planning unit is for its utilization as decorative building material by contemporary architecture. There is presently an increasing requirement for quality andesite and basalt to fill this need.

Operational quarries within or adjacent to the planning unit are listed in the following table along with rock type, primary utilization and estimated reserves.

<u>Name</u>	<u>Location</u>	<u>Rock Type</u>	<u>Utilization</u>	<u>Reserve (CY)</u>
Brightwood	S25,T2S,R6E	Basalt	Crsh aggreg	200,000
Mud Lake	S2,T4S,R8½E	Andesite	"	300,000
Tower	S24,T1S,R8E	Basalt	"	50,000
Old Maid	S21,T2S,R8E	Mudflow	Sand & gravel	200,000
White River	S16,T3S,R9E	Glacial	"	500,000
Brightwood	S24,T2S,R6E	Alluvium	"	20,000
Dollar	S20,T1S,R9E	Andesite	Crsh aggreg	200,000
Marco Creek	S13,T1S,R8½E	"	"	100,000
Hiyu	S33,T1S,R8E	"	"	250,000
Laurel Hill	S16,T3S,R8E	Quartz	"	50,000
Goodfellow	S5, T2S,R7E	Andesite	"	250,000
Bald Butte	S10,T2S,R8E	Basalt	Stone	50,000
Clear Creek	S28,T1S,R9E	"	Crsh Aggreg	50,000
Robinhood	S5,T3S,R10E	"	"	50,000
Green Lake	S24,T4S,R9E	Andesite	"	200,000
TOTAL AGGREGATE RESERVE				1,750,000 CY
TOTAL SAND AND GRAVEL RESERVE				720,000 CY

Forest Service utilization of aggregate averages 2,000 cubic yards per year per quarry. At this rate, existing reserves will supply Forest Service needs in the planning unit area for 67 years. Sand and gravel utilization averages 10,000 cubic yards per year. This utilization will deplete present quarries in approximately 72 years.

The geologic formations which will provide acceptable aggregate and sand and gravel within the planning unit are extensive. With adequate exploration and proper development, the reserves of this resource should provide adequate supplies for both governmental and private use for well in excess of 100 years.

Features of Geologic Interest. Points of geologic interest within the planning unit are generally related to the Mt. Hood volcano and the associated glacial activity on the upper peak. Other features of geologic interest are related to mass wasting processes which occur on the lower mountain slopes.

Glaciers. Numerous active glaciers exist on the upper mountain slopes. These ice rivers have developed many of the classic erosional features associated with ice action. They include ice falls, crevasses, cirque basins and lakes, lateral and terminal moraines and striated (grooved) bedrock.

Fumeroles. Crater rock and the adjacent basin on the south flank have active fumeroles (steam and gas vents) which can be observed by easy hike from Timberline Lodge. These vents are remnants of the original eruptions and indicate a continuing heat source.

Intrusive Plugs and Dikes. Numerous features of intrusive volcanic activity are evident along Highway 26 in the Laurel Hill and Still Creek areas. These include basalt dikes, coarse grained igneous rock (quartz diorite) and joint systems. These features, along with the main mountain mass and adjacent satellite cones and lava flow, record much of the High Cascades volcanic history.

Mudflows and Glacial Outwash Gravels. These features existing along Sandy, Zigzag and White River Canyons record the catastrophic activity of alpine and volcanic erosion. Mud flows are the result of saturation and failure of large masses of cinder and ash during and subsequent to volcanic eruptions. Glacial outwash deposits represent, in part, failure of glacial dams and resulting torrential runoffs which still periodically occur.

Waterfalls. These features are numerous on the lower flanks of the mountain and reflect differential erosion of weak and resistant geologic formations which make up the mountain flanks and foundation. Here, soft formations erode below the resistant flows and form dramatic ledges over which streams pass in series of falls and basins.

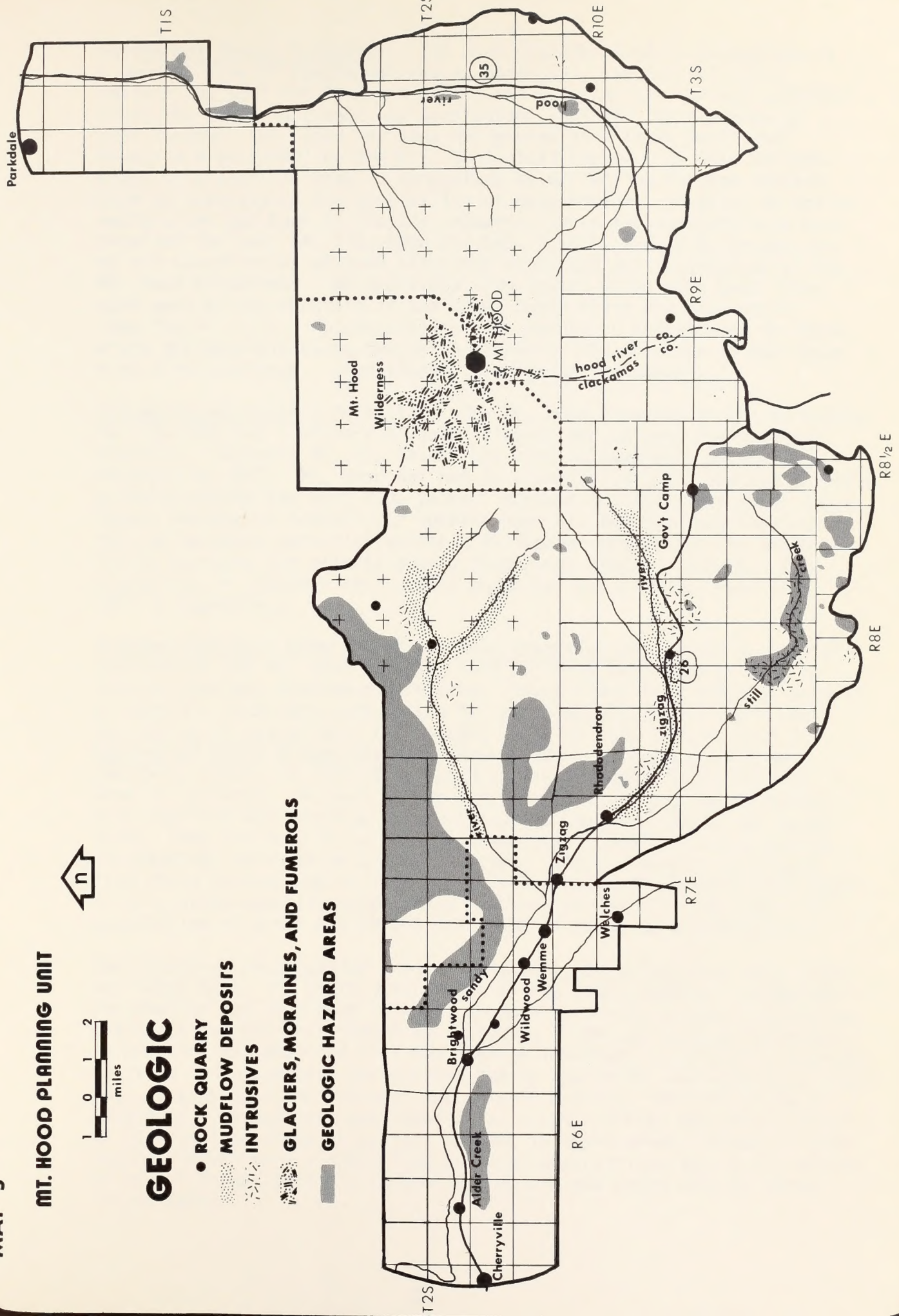
MAP 5

MT. HOOD PLANNING UNIT



GEOLOGIC

- ROCK QUARRY
- ▨ MUDFLOW DEPOSITS
- ▨ INTRUSIVES
- ▨ GLACIERS, MORAINES, AND FUMEROLS
- ▨ GEOLOGIC HAZARD AREAS



Geothermal Energy Potential. The High Cascade Range is recognized as a general area of geothermal energy potential. Recent volcanism (within the past few thousand years) and existing hot springs activity along the crest in Oregon and Washington, indicate the presence of heat sources. Mt. Hood has been designated as a Known Geothermal Resource Area (KGRA) by the U.S. Geological Survey. By this designation, this specific area is recognized as warranting further exploration to investigate the possibility of development. To date, no active exploration has been initiated. However, lease applications have been received for Sec. 24, T3S, R8½E and Sec. 7, T3S, R9E, W.M. Oregon and on ten square miles of land along the south and east boundaries of the Mt. Hood Wilderness. An additional ten square miles have been filed upon west of the mountain in the upper Sandy River drainage basin. (See Map 6). Future applications should be anticipated in these areas and possibly along the north slopes of the mountain in the upper Hood River drainage. (Additional information in Appendix.)

Volcanism and Seismic Potential. The Mt. Hood Planning Area lies within an area that has a history of both volcanic and seismic (earthquake) activity. Adjacent Mt. St. Helens has been volcanically active as recently as 1857. Mt. Hood has had no scientifically documented eruptive activity within the last 2000 years. However, active steam vents and a recent earthquake tentatively located near the mountain are indications that an eruption potential exists. An interesting article by Hammond (1973) narrates the effects when a fictitious eruption occurs. (See discussion of volcanic and seismic potential and effects, Beaulieu, 1974 in Appendix.)

Previous Geologic Reports and Planning Investigations. The geology of the area of the Mt. Hood Planning Unit has been described in part by several previous studies and reports. These range from detailed studies of specific locations such as the Mt. Hood Volcano (Wile, 1969) and Age Dating at Laurel Hill (Bickerman, 1970) to area studies such as Geology of North Oregon Cascades (Peck, 1964) and Geology of Oregon (Baldwin, 1964). A list of selected references which apply to this area is appended. As part of the planning process, available reports were reviewed and cited as documentation as they applied to the study area. They are reports by qualified geologists professionally active in planning, research or academic fields. The information developed from these sources was utilized to provide a general planning data base or to provide specific information relevant to the planning area, the acquisition of which was beyond the scope of planning investigations.

The planning investigation involved producing a geologic map base from published data, air photo interpretation and field mapping. Landslide information was developed from air photo interpretation and field reconnaissance and previous timber sale studies. The construction materials information was obtained from the ongoing inventory of materials sources, existing quarry reports and current quarry operations and materials testing. Energy data and volcanic and seismic activity information were developed from previous published data, lease activity and observations by personnel involved in current studies in these areas. Areas of geologic interest were located from personal observations during the course of normal forest geologic reconnaissance and published data by other investigators.

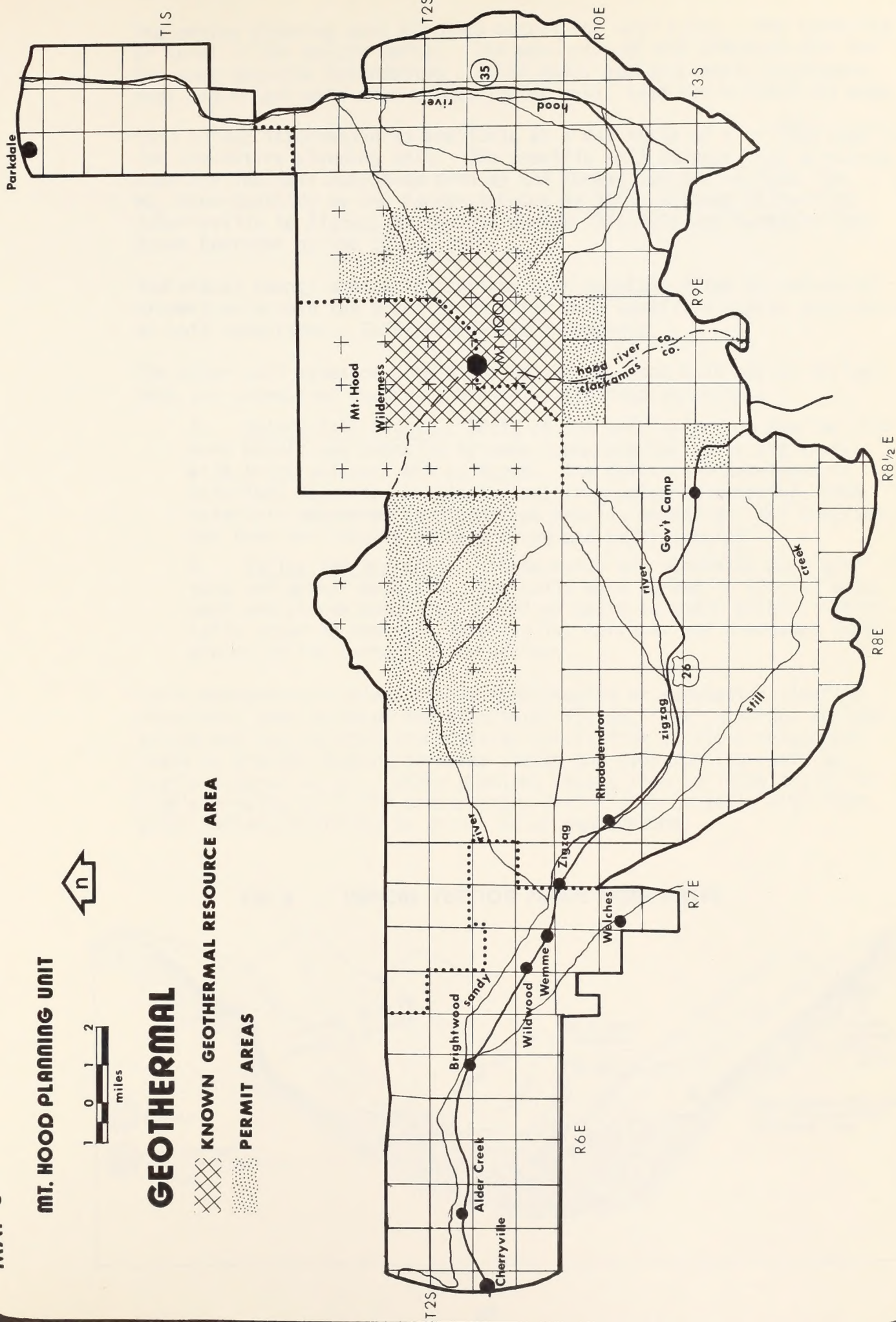
MAP 6

MT. HOOD PLANNING UNIT



GEOHERMAL

- KNOWN GEOHERMAL RESOURCE AREA
- PERMIT AREAS



SOILS

The entire planning unit has been mapped for soil types. The intensity or level of the detail varies. The west side of the planning unit has the most detailed information. Soils maps, geologic maps, vegetation maps and others were used in developing basic land use suitability maps.

Soil survey information is available at a map scale of 1" = 1320 feet for the entire planning unit. The specific soil surveys that have been done are the Bull Run-Sandy area by the Forest Service in 1964, the Mt. Hood-Eastside by the Forest Service in 1973, Highway 26 Corridor (Cherryville to Zigzag) by the SCS during 1971-1973 and Parkdale-Hood River Corridor by the SCS in 1973.

Individual county sanitation offices also maintain files on individual properties within the planning unit for more sensitive onsite description of soil conditions. This coverage is incomplete.

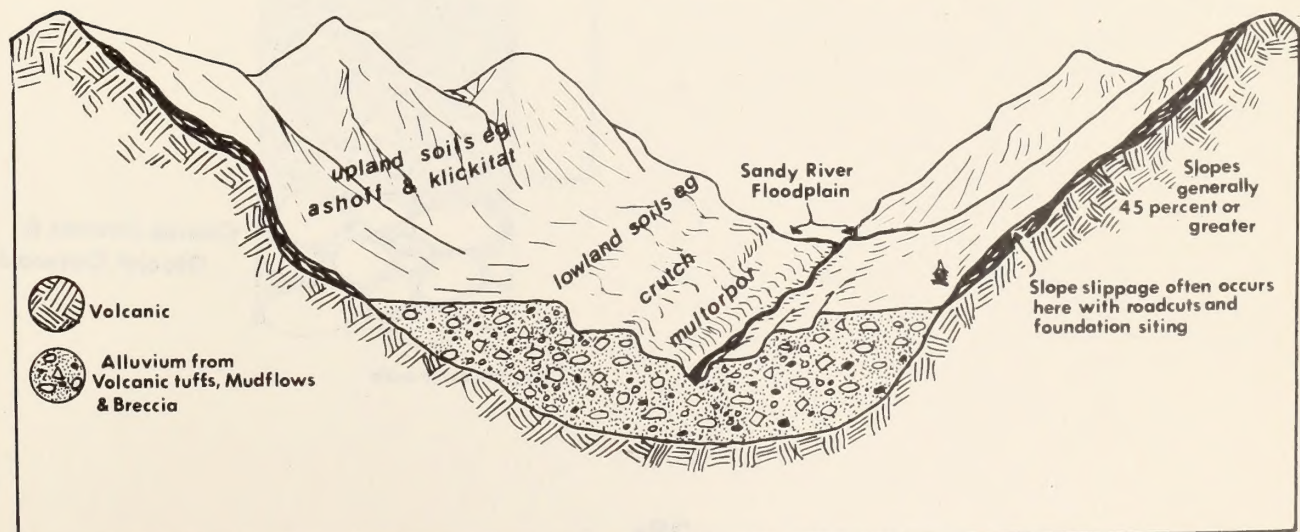
The major soil types or conditions of the Mt. Hood Unit may be divided into two categories and are graphically depicted on plates:

A. Upland Hill Slopes. Soils of the unit vary from shallow over hard basalt and andesite to deep loamy glacial soils and areas with thick volcanic ash surfaces. The soils have developed in materials deposited by glaciation, from volcanic activity, from materials weathered in place from basalt, andesites, and breccias and from the results of weathering and water erosion.

B. Valley Terrace Soils. These soils are generally deep over sand and gravel deposits. The soils were formed in glacial outwash and stream deposited gravel of basic volcanic origin. These soils occur on the more level valley terraces and abandoned floodplains of the current river valleys.

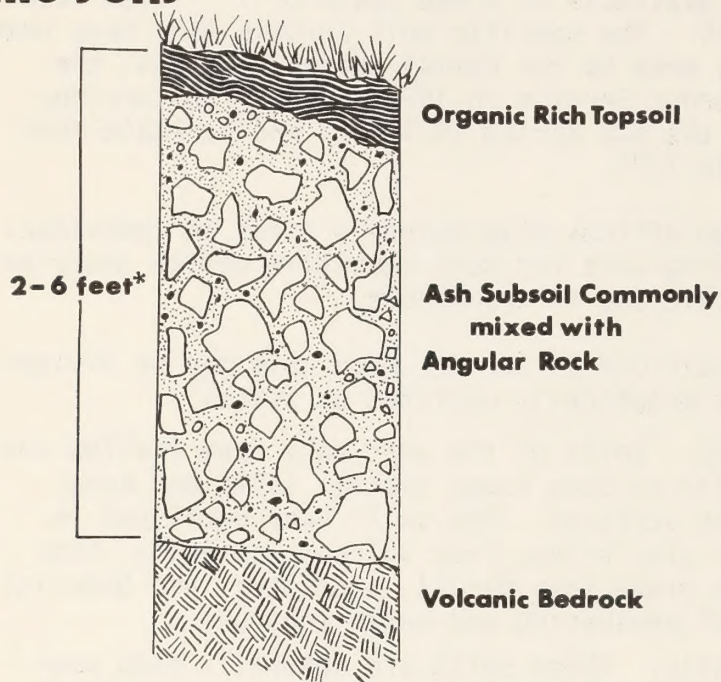
Soils management problems result from logging or vegetation clearing practices, road building and structural siting. Soil erosion, sedimentation and loss of soil productivity result from careless management (such as tractor yarding on steep slopes and constructing roads on highly erosive soils). Other problems result from building trails in highly erosive soils and constructing drainfields on soils with high water tables, resulting in ground water degradation.

FIG. 3 **TYPICAL SECTION SANDY RIVER VALLEY**

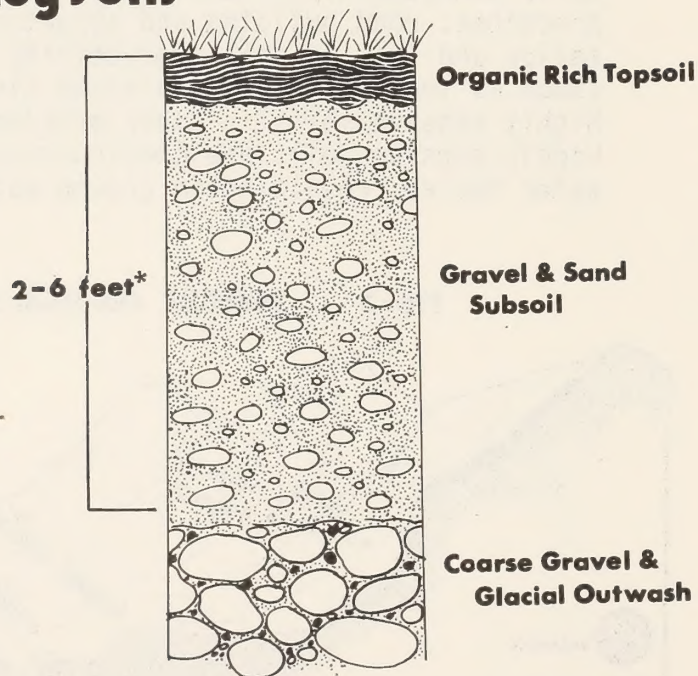


**Mt. Hood Planning Unit
GENERAL SOIL PROFILES**

upland soils



valley soils



*Diagram not to scale

GROUNDWATER

The groundwater situation within the planning unit was studied and described by the Oregon State Engineers Office in a special report. (Lisner, F.G. and H.R. Sweet. "Mt. Hood Study - Groundwater" Oregon State Engineers Office. 1974)

The ridges bordering the Mt. Hood Highway Corridor, the upland areas east of Hood River and other similar elevated areas are areas of groundwater recharge, while large river and stream channels such as the Sandy, Hood and Zigzag Rivers and Still, Lady and Henry Creeks act as surface drains for groundwater discharge. The water table in discharge zones is generally closer to the land surface. Groundwater in the planning unit is being tapped by at least 125 known wells. Sampling of the wells indicates that the water is generally of good quality and the only prevalent chemical quality problem appears to be general high iron and manganese content.

The quality of groundwater in the planning unit is also related to the volume and types of waste generated and the locations and methods of disposal. The Clackamas County Health Department tested 74 private water systems between April 1972 and August 1973. It reported that 14 were declared unsatisfactory due to bacteriological pollution. Of 17 public water systems reporting with 242 samples taken, 196 were found to be satisfactory. Forty were declared unsatisfactory and six were not tested. The contamination of water well supplies is dependent upon the proximity of the waste disposal, direction and rate of movement of the contaminated groundwater and ready access (lack of seal) to the well.

Much of the low lying area within the Mt. Hood Planning Unit is within a groundwater discharge area. Relatively permeable gravelly materials are ubiquitous in these valley bottoms. When septic tank effluent is discharged in these areas, it percolates to the shallow groundwater and migrates down gradient with it to a discharge point; for example, water wells, spring, marshes and/or streams. Under these conditions, dilution and dispersion may be the principal agents in the attenuation of some effluent constituents.

Surface Water - Description

Included in the Mt. Hood Planning Unit are portions of two drainage basins - the Sandy River and East Fork Hood River. These watersheds exhibit flow characteristics which are relatively uniform when compared with other large watersheds in the Cascade Mountains. In addition to stream flows originating from the forested zones, the Mt. Hood glaciers contribute substantial melt water during the summer period when rainfall is slight. These features tend then to even out the stream flow through the year in glacier fed tributaries of the East Fork Hood River and the Sandy River.

The average annual yield of the Sandy watershed is approximately 997,000 acre-feet per year as recorded at the USGS Marmot gauge. This has ranged from a low of 560,000 acre-feet to a high of 1,380,000 acre-feet. Monthly flows for the November through May period are very uniform and range from 10 - 13 percent of the annual flow. A double peak occurs with the highest water generally occurring in December and another lesser peak occurring in the April snowmelt period. June through October flows are decreased, but the decline is lessened by the influence of the glacier melt water. The summer low occurs in the August - September period, with the monthly average about three percent of the annual average.

In the East Fork Hood River the annual yield is about 196,000 acre-feet as observed near the community of Mt. Hood. Stream flow records are limited but statistical correlation by the Oregon State Water Resources Board (1965) indicates an expected variation in annual yield would be in the magnitude of 130,000 acre-feet to 170,000 acre-feet. Variation in monthly flows is even less pronounced in the East Fork Hood River system than in the Sandy. On a monthly basis, December flow is the highest, averaging approximately eleven percent of the annual flow. The minimum flow annually occurs in the August - September periods but seldom drops below five percent of the annual yield. A vivid expression of glacial influence.

Streams on the National Forest have been classified from 1 through 4, based on the existing or potential use for fisheries and downstream use for domestic supplies or fish hatcheries. Prescriptions for classification are in the Forest Service Manual 8223. Streams providing water for domestic water supplies or supporting large numbers of fish are class I streams. Streams supporting moderate though significant numbers of fish are class II streams. All other permanent streams are class III streams. All other intermittent streams are class IV streams.

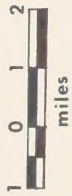
The State of Oregon classified streams in a similar manner except there are only two classes of streams rather than four as used by the Forest Service. Essentially class I and II streams as classified by the Forest Service are class I streams as classified by the State.

The study area contains a total of 161.9 miles of class I and II streams. There are an additional 668 miles of class III and IV streams in the area.

All the streams in the planning area that meet class I or II Forest Service criteria have been classified and inventoried. The streams by name and mileage by class are listed in the Appendix and are shown on Map 7.

MAP 7

MT. HOOD PLANNING UNIT



WATER WELL LOCATIONS, WATERSHEDS, & STREAM CLASS

• Water Well

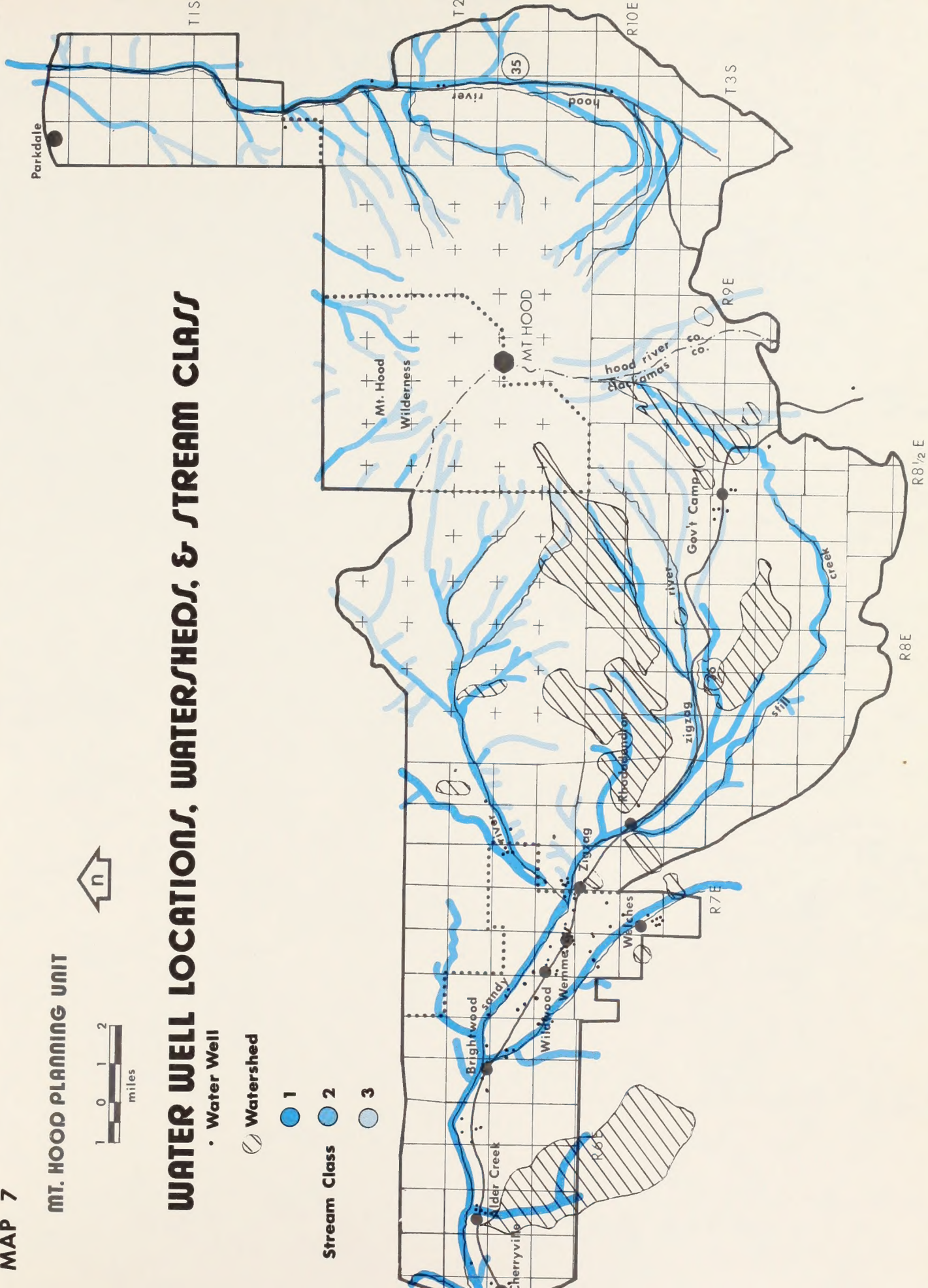
Watershed

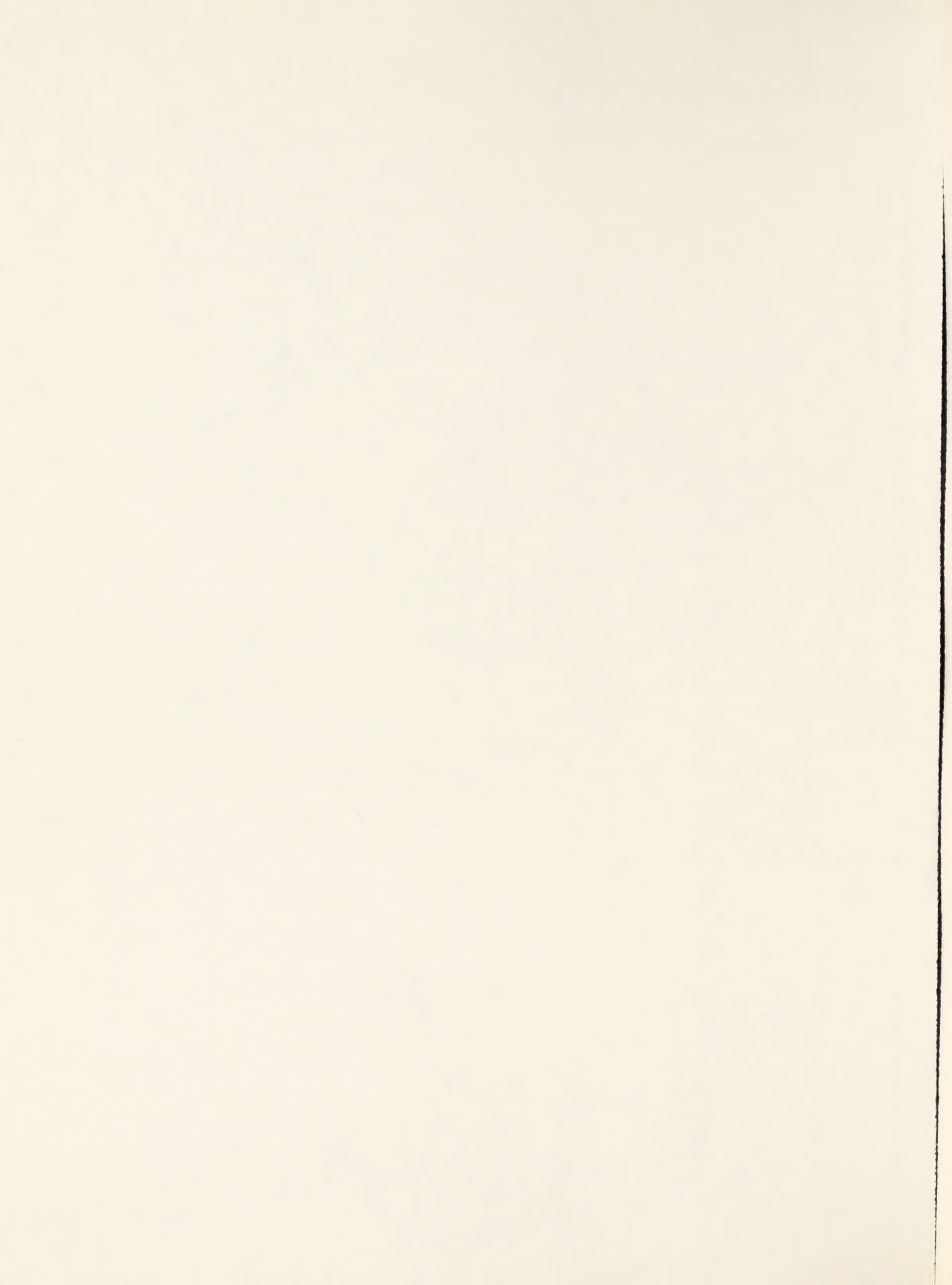
1

2

3

Stream Class





Domestic water supply systems are developed in Lady Creek, Henry Creek, upper Still Creek, Tillie Jane Creek, Crystal Springs, and Parkdale Cold Springs. There are single home, small group, or recreation area systems on virtually every major stream in the study area.

Quality of water in the streams is generally very high above areas of population development. The consulting firm of Cornell, Howland, Hayes and Merryfield and Clackamas County completed analysis of the surface water supply for the Clackamas County portion of the area. Tables of water quality data prepared for the study are included in the "Mt. Hood Ground Water Study paper developed by H. R. Sweet and F. G. Lissner.

Runoff records have been developed by the U.S. Geological Survey in the Sandy River basin from as far back as 1908. Though the records are spotty for some streams, there are good records for enough stations in the area to make good stream flow analysis. Data is totally lacking in the Hood River drainage.

Except for the unusual 1964 flood which flooded every drainage in the study area, flooding has a tendency to be selective and only part of the drainages will flood during a storm event. This is due to variation in such physiographic features as mean elevation for subdrainages, aspect and orientation. These features cause variation in temperature and precipitation which results in different snow accumulation and retention patterns.

The condition of the channels indicates that with few exceptions, the named streams in the study area have a tendency to flood on an annual basis. Channel erosion and deposition causes problems to developments in the flood plains.

A comparison of annual runoff to precipitation was made to determine the effect developments in the Sandy Basin have had on this balance. No change in relation was detected. The Department of Environmental Quality, the State Water Resources Board, the U.S. Geological Survey and the U.S. Forest Service are monitoring water quality and quantity on a continuing basis.

An inventory of reservoir sites in the drainage area indicates that there are no sites suitable for major impoundments in the area. Some small impoundment sites are available but they are of very low quality.

WATER QUALITY

The Department of Environmental Quality (DEQ) adopted "Special Water Quality and Waste Treatment Standards for the Sandy River Basin" to supplement the general "Standards of Quality for Public Waters of Oregon and Disposal Therein of Sewage and Industrial Wastes." The special standards are the governing regulations for the area being considered. These conditions state:

1. For low stream flow periods (June 1 to October 31) the monthly average effluent concentrations of five day BOD* and suspended solids (SS) shall not exceed 10 mg/l. Positive protection shall be provided to prevent bypassing of raw or inadequately treated sewage.
2. For high stream flow periods (November 1 to May 31) a minimum of secondary treatment shall be provided and all facilities shall be operated at maximum efficiency at all times.
3. All effluent is to be disinfected, equivalent to maintaining a one mg/l chlorine residual after a one hour contact time.

In September 1974, a draft Water Quality Management Plan for the Sandy River Basin was prepared by the DEQ. Although the plan is still in discussion stage and has not been acted upon, more stringent requirements are being considered for the Sandy River Basin.

Staff members of DEQ advise that there is likelihood of requiring no discharge for summer low flow periods and BOD and SS concentrations not exceeding 10 mg/l during the rest of the year. These more stringent requirements are being considered as the basis for planning for future treatment facilities with effluent irrigation or leaching as the summer alternative to effluent discharge.

The achievement of effluent concentrations of 10 mg/l of BOD and SS can generally be done by the activated sludge sewage treatment process, followed by effluent polishing. Large amounts of sludge* are generated by such processes and long range sludge disposal methods will have to be investigated. Also, adequate operation and maintenance cannot be overstressed when discussing such high quality effluent standards.

There is also a Draft Water Quality Plan for East Fork Hood River with similar standards.

See Glossary

VEGETATION

One of the most basic resources of the Mt. Hood Planning Unit is its natural vegetation. The broad sweep of green forest and the beautiful subalpine meadows and parklands are some of the most important elements in the highly scenic character which is the area's dominant feature. Parts of this same forest are important sources for wood products. Recreationists are attracted to the area in late summer and early fall by the promise of ripe huckleberries. The character of the vegetation creates different kinds of wildlife habitat to insure a variety of game and nongame animals. Vegetation shades streams and keeps the temperature livable for fish which attract still more recreationists. These are a few of the countless ways natural vegetation determines or enhances the use of an area.

It is difficult to make a generalization about the vegetation of the Mt. Hood Planning Unit except to recognize its most obvious characteristic, diversity. However, an attempt is made here to describe some of the most common forms of vegetation encountered in the area.

Recently* Disturbed Areas. These are areas where a man-made (i.e. timber harvest) or natural (wildfire) phenomenon has caused the existing forest cover to be removed and temporarily replaced with what might be called "brush" or "weed" patches. These form an intermediate step in the process of reforestation of an area. These areas support the seedlings and saplings of coniferous species that will eventually form the forest canopy (often planted by man in the case of clearcuts**), in addition to a wide variety of shrubs, herbaceous plants and deciduous trees. Some species commonly found are red alder (Alnus rubra), vine maple (Acer circinatum), huckleberries (Vaccinium sp.), blackberry (Rubus), brackenfern (Pteridium aquilinum), rhododendron (Rhododendron macrophyllum), beargrass (Xerophyllum tenax), and fireweed (Epilobium angustifolium). Less than 5% of the planning unit consists of area recently disturbed, virtually all of which is due to timber harvest; less than 1% of the area has been burned in the last 20 years.

*Within the last 20 years, approximately the length of time it takes to establish a closed canopy forest.

Undisturbed Areas. These are sites that do not support closed canopy coniferous forest for ecological reasons and account for about 25% of the total planning unit area.

Some wetlands do not support forest vegetation where inadequate drainage results in a soil layer saturated with water. Most meadows and marshes are predominantly vegetated by various species of grasses, rushes and/or sedges with a wide variety of herbaceous species including skunk cabbage (Lysichitum americanum), coltsfoot (Petasites frigidus) and cow parsnip (Heracleum lanatum) as the most commonly found. Often red alder (Alnus rubra), spirea and willow (Salix) will be found around the periphery or in these sites. In areas of heavy snow accumulation, sitka alder (Alnus sinuta) may also be found.

Another broad category of nonforested areas is characterized by thin soil or bare rock and resulting sparse vegetation. This includes rock outcroppings and talus slopes. These areas support such species as vine maple (Acer circinatum), mock orange (Philadelphus lewisii), oceanspray (Holodiscus discolor) and parsley fern (Cryptogramma) in addition to mosses and lichens.

** See Glossary

Alpine and timberline areas fall into another group of undisturbed nonforested vegetation types. These are probably some of the most diverse and interesting areas of the Mt. Hood Planning Unit in terms of vegetation. Tree-line ranges between about 5000 and 6000 feet on Mt. Hood, being highest on the south side of the mountain.

The predominant undisturbed nonforested vegetation types are, in order of increasing elevation:

Treeline, Subalpine Parklands. Tree species encountered are mountain hemlock (Tsuga mertensiana), whitebark pine (Pinus albicaulis) and subalpine fir (Abies lasiocarpa). Often, trees are shaped into distorted forms (Krumholz) by the wind. Other species include huckleberries, partridge foot (Luetkea pectinata), beargrass (Xerophyllum tenax) and many of the species found in subalpine meadows.

Subalpine Meadows and Forblands. There are many different types of herbaceous vegetation in alpine areas, depending on moisture content of the soil, depth of soil and climatic conditions. The slopes of Mt. Hood contain many large alpine forblands, lush with blooming wildflowers in the late summer. A few of the most commonly found species are beargrass, Indian paintbrush (Castilleja), pasqueflower (Anemone occidentalis), lupine (Lupinus), phlox (Phlox) and heather (Phylloidoce, Cassiope).

Alpine Bryophyte Communities. These are areas where extreme environmental conditions force even hardy vascular plants to give way to mosses and lichens. This type is the highest (in elevation) vegetation found in the planning unit and grades into the nonvegetated glacial and volcanic material that forms the summit of Mt. Hood.

The fourth category of nonforested land in the planning unit consists of the floodplains of the Sandy, Zigzag and Salmon Rivers and the East Fork of the Hood River. Flooding occurs often enough in these areas to prevent a typical coniferous forest from developing. Often, a little or no vegetation at all is found. Where vegetation has had a chance to develop, deciduous tree species such as black cottonwood (Populus trichocarpa), bigleaf maple (Acer macrophyllum) and red alder (Alnus rubra) occur. Shrub species encountered include salmonberry (Rubus spectabilis) and vine maple.

Closed Canopy Forest. The closed canopy forest of the Mt. Hood Planning Unit, about 70% of the total area, is composed almost totally of coniferous forest unique to the Western United States. Exceptions to this rule are found in areas where the forest was disturbed more than approximately 20 years ago by wildfire or timber harvest and coniferous species have not yet overtaken deciduous species. These sites are revegetated with dense stands of red alder (Alnus rubra), with understory species such as vine maple (Acer circinatum), ferns (Pteridium aquilinum, Polystichum munitum) and huckleberries (Vaccinium). Most areas of this type are found in the Highway 26 corridor west of Laurel Hill. (One of the largest and most prominent examples, the Zigzag Burn, is seen looking south from Highway 26 in the Laurel Hill area.)

In 1972, approximately 300 sites were examined on National Forest land within the planning unit to determine plant community. The data was then analyzed to determine areas of similar vegetation type and the results are noted in the appendix.

If there is any one single biological feature about the Mt. Hood Planning Unit, it is the great species diversity among the different plant and animal communities. The Planning Unit's diversity is a very delicate resource made up of interacting systems which are extremely complex. One of the reasons the Planning Unit supports a great variety of wildlife species is due to the area's geography. The tremendous influence of Mt. Hood and its associated range of ridges has separated the Planning Unit into two dissimilar climatic regions. The great relief patterns found between Oregon's highest summit (Mt. Hood) and elevations less than 800 feet, spreads across four major vegetative types. When one combines these major vegetative types with the micro habitat types generated by relief patterns, east, west, climatic differences, elevation, influences of the Columbia Gorge, and a myriad of other aspects, the Planning Unit becomes an area of many habitat types and hence the home for many animal species.

Deer and elk are being affected by the diminishing area of available winter range. The winter range for the Planning Unit is mainly confined to an area 2,000 feet in elevation and below. On south exposures the winter range may extend to higher elevations, and of course it fluctuates from year to year depending on the weather. Because of high numbers of free ranging dogs, residential and commercial development, plus the low nutritional value of vegetation the winter range in the Planning Unit is not of particularly high quality.

The existing stands of old growth (conifer and deciduous) produce an abundance of snags* in the Planning Unit. This has attracted an impressive number of animals which are dependent on or use the snag habitat. These animals are very beneficial to man's well being. Not only do they have a tremendous scientific and aesthetic value, but they should be recognized as an important management tool to maintain a healthy forest, which in turn is a financial asset to man's pocketbook. These cavity-users play an invaluable role in the biological control of forest insect and rodent populations.

Throughout most of the United States, if not most of the world, there is a growing interest in wildlife viewing. Evidence of this can be gleaned from the growing number of people joining organizations related to wildlife viewing. One recent study done by GMA Research Corporation of Portland, Oregon (Oregon Wildlife 1975) found that 95% of Oregon adult population engages in some sort of wildlife oriented activity such as hunting, fishing or wildlife viewing. It would seem evident that the viewing value of wildlife is going to increase as the people population continues to rise.

Through the uncountable millennia on earth, thousands of animals have evolved, survived and died. Each species has special adaptations that fitted to a specific niche* in the environment. As new species are produced in a changing environment, some are better adapted to function in an environmental niche and the original occupant is displaced. If the replaced tenant cannot adapt to the change, it is "in trouble". Most of the environmental changes in the past were brought on gradually by climatic and/or geologic changes. With the advent of the human animal, environmental changes have been sped up through his technology and habit of introducing competing species - wild and domestic. Due to man's environmental manipulation, the species are now disappearing faster than they are evolving. Those species which cannot adapt to this tinkering or manipulation are the ones in trouble, and are included on the list of endangered and threatened species. (See Appendix)

* See Glossary

FISHERIES

The unit contains some 25 miles of stream area in the main Sandy River and 100 miles of its principal tributaries from their source on the western face of Mt. Hood. Many emanate from sparsely vegetated glacial areas on the mountain. However, most are generally well shaded after leaving their source. Also, some 24 miles of East Fork Hood River and 50 miles of its tributaries are in the unit. These emanate principally from the eastern slopes of Mt. Hood, many in glacial areas.

Stream courses in the Sandy basin are generally narrow and steep in the upper part of the watershed, and wider and more moderate in gradient in the lower parts of the unit. Steep gradients and persistent heavy bedloads of glacial silt and sand, coupled with dynamic movement of coarse, unconsolidated sand and cobble materials, are characteristic in much of East Fork Hood River and several major tributaries of the Sandy, including the main stem, Zigzag, and Little Zigzag Rivers. Muddy Fork of the Sandy carries extremely high quantities of glacial silt and sediment into downstream areas.

Characteristic heavy bedload movement, siltation from summertime glacial melt, and extremely cold water temperatures limit the natural productivity of these streams for resident or anadromous salmonids.* These conditions also have a predominating influence on the Sandy and Hood River systems downstream from the Planning Unit. The influence of cold water from source areas is considered an asset. However, this may be outweighed by the negative aspects of siltation, sand deposition, and periodic relocation of bedload materials found in streams with a glacial source.

Nonglacial streams in the Sandy basin provide good salmonid production and have potential for increased use by salmon and steelhead. Pertinent information concerning fish resources in the unit exist in several reports (Collins 1974; Pirtle 1953; Thompson, Hutchison, Fortune, and Phillips, 1966; Hutchison, and Aney 1964; and Hutchison and Corthell 1963).

Streams in the Planning Unit produce steelhead, anadromous cutthroat trout, and coho salmon where accessible to migrating adults. A small run of spring chinook salmon also use the lower Salmon River. Average numbers passing Marmot Dam at River Mile 30.1 downstream from the Planning Unit boundary for 1957-69 were 3,300 winter-run steelhead, 900 coho salmon and 120 spring chinook. However, these counts have considerable variation from year to year. An estimated 250 winter steelhead and 75 adult coho use the East Fork Hood River system including tributary areas.

Wild populations of cutthroat and rainbow trout exist throughout streams in the unit. The former are more widespread and common in nearly all tributary areas. German brown, brook and Dolly Varden trout are occasionally encountered. Cottids, white fish, Pacific threetooth lamprey, western brook lamprey, and, in some areas, dace are common nongame fish found in the upper Sandy and East Fork Hood basins. Lakes in the unit contain cutthroat, rainbow, and brook trout.

Anadromous fish produced in the Planning Unit contribute to extensive fisheries in downstream areas of both the Sandy and Hood basins, as well as in the Columbia River and Pacific Ocean. Brightwood, at about River Mile 38, is the present upper deadline for steelhead and salmon angling in the Sandy basin.

* See Glossary

Several thousands of angler days are expended each year by the public in pursuit of these fish, but most of this is off of the planning unit. Salmon also contribute to commercial fisheries in the ocean and Columbia River. Fish harvested through realizing full potentials of salmon and steelhead production areas in the planning unit, plus the value of those harvested from anticipated stocking programs above Marmot Dam would, on the average, amount to an estimated \$1.8 million annually at 1975 prices and values (Tuttle, Richards and Wahle, 1975).

The Oregon Department of Fish and Wildlife annually stocks approximately 195,000 juvenile winter-run steelhead in the Sandy River downstream of Brightwood; about 65,000 of these are stocked between Marmot Dam and Brightwood. Also, about 1.0 million coho smolts are planted in the Sandy each year, 50,000 spring chinook smolts and 75,000 summer steelhead smolts are stocked in the Sandy Basin within the planning unit boundaries. The latter two species are being used as part of the Department's program to more fully utilize available production areas in tributaries and to provide high quality fisheries in late spring and summer in the Sandy River. Stocking of approximately 300,000 spring chinook smolts is expected by 1977. Coho adults surplus to hatchery needs have also been planted in Sandy Basin streams.

Sites for construction of an anadromous fish rearing pond have been identified along the lower Salmon River by the Department of Fish and Wildlife. Development of this type of facility has considerable merit in meeting long term fish resource demands and is being explored by the Department.

Steelhead are occasionally taken in East Fork Hood River incidental to an extensive trout fishery maintained by the Oregon Department of Fish and Wildlife through stocking catchable fish. The stream area adjacent to State Highway 35 in the planning unit is presently stocked with approximately 10-12,000 catchable cutthroat trout each year. Nearly 20,000 yearling rainbow are annually stocked in accessible streams of the Sandy Basin above Brightwood. Some 28-30,000 angler days are spent by the public in fisheries supported by the catchable trout stocking program in the planning unit.

Remote stream areas are managed to provide angling on wild, naturally maintained stocks of trout, principally cutthroat. While the intensity of use is less than in areas heavily stocked with catchable sized fish, these areas are maintaining very significant angler opportunities. The popularity of fishing for wild fish is increasing.

Several lakes in the unit are periodically stocked with yearling and/or fingerling sized rainbow, cutthroat and brook trout. Nearly 15,000 yearlings and 9000 fingerling were stocked in lakes in 1975. Angling for trout at high lakes in the unit is popular.

Several miles of both the main Sandy River and its tributaries evidence man's activities to control the river or to prevent flood damage to structures. Over 20 miles of the main Sandy River above Marmot Dam, several areas in the lower Salmon River and several miles of other tributaries have been channelized, straightened, realigned or otherwise modified through placement of revetments and similar structures for flood damage protection. Several small tributaries

are blocked to fish passage by manmade barriers. Much of main East Fork Hood River was realigned and straightened with construction of Highway 35. These activities have all had a long term negative influence on the natural capability of the affected stream areas to produce fish.

Major appropriations of water for irrigation from East Fork Hood River within the study area has a serious impact on fish habitat in stream reaches below. For several decades, anadromous fish resources in the upper Hood Basin were curtailed by fish passage and protection problems at dams at Powerdale and Dee. These problems have been reasonably well resolved in the last decade.

Anadromous fish use of the upper Sandy Basin has been influenced by Marmot Dam at River Mile 30.1. Long standing fish passage problems at the project as well as several problems caused by flow depletion in the river for several miles below it (Hutchison and Claire, 1970) are being resolved between the Department of Fish and Wildlife and Portland General Electric Company, owners of the project. Correction of these problems is extremely important to fully realizing anadromous fish potentials in the Sandy Basin.

Fish production in the planning unit does not appear to be influenced by logging or other developments to any appreciable extent other than for problems mentioned above, although there could be impacts from domestic sewerage or treatment plant effluent entering surface waters in the Sandy or Hood Basins that are as yet undetected. The impact of logging adjacent to some tributary streams is being monitored by the Forest Service. Protection of water quality from siltation, increased temperature and from sources of pollution associated with urban developments will be important watershed considerations. Key fishery streams have been identified (Collins, 1974) and will need high levels of protection from man's encroachment to maximize public benefit of fish resource management activities.

VISUAL RESOURCES

Because this planning unit contains Mt. Hood, the central geographic feature in the planning unit, it is not surprising that the unit has the highest scenic values found on the Forest planning unit. All agencies have jurisdiction over lands in the planning unit have taken some steps toward the preservation of this scenic quality. These steps have been documented in handbooks and in the form of county policies.

Visual Management System. The Forest Service has developed the Visual Management System 1/ which establishes the visual landscape as a basic resource to be treated as an essential part of and receive equal consideration with the other basic resources of the land. It is Forest Service policy to both inventory the visual resource and provide measurable standards for the management of it. The standards are called visual quality objectives* and are the product of an inventory which includes landscape variety class (physical features) and sensitivity levels (people's concern for scenic quality). The objectives are represented by five terms which can be defined as visual resource management goals. The objectives are Preservation, Retention, Partial Retention, Modification and Maximum Modification. Except for preservation, each describes a different degree of acceptable alteration of the natural landscape based on the importance of aesthetics. The degree of alteration is measured in terms of visual contrast with the surrounding landscape.

Present Visual Quality. Expanding on the Visual Management System, analysis of scenic values was made by tallying all of the various landscape features of land form, rock form, flora, fauna and general characteristics. Using a weighted score system and subtracting values for negative manmade features, the scenic value or landscape variety index is expressed in a numerical value equivalent to the number of scenic features per acre. This was computed for 183 separate landscape segments within the planning unit. 2/ Comparing the Mt. Hood Planning Unit with seven other planning units on the National Forest shows this unit to have the highest individual segment score (8.4) and also the highest average score (3.75) on the Forest. The average for the eight planning units so inventoried is 2.53.

A scenic quality map was prepared showing areas of low, medium, high and very high landscape variety. In terms of percent of area, the planning unit has the following amounts of scenic quality: Low - 18%; Medium - 20%; High - 43%; Very High - 19%. Sixty two percent of the planning unit area shows high or very high scenic value.

Within the planning unit, the following acres and percent of total area indicate the present situation for the visual quality objectives.

1/ National Forest Landscape Management, Volume 2, Chapter 1, USDA Handbook 462

2/ Details on this process are unpublished but available from the Mt. Hood N.F.

* See Glossary

Visual Quality Objective	Hood River District	Zigzag District	U.S.F.S. Total	%
Preservation	8,752 acres	5,341 acres	14,093 acres	11
Retention	3,480 "	18,446 "	21,926 "	17
Partial Retention	11,967	49,562	61,529	48
Modification & Max Modification	10,436	21,382	31,818	24
TOTAL IN PLANNING UNIT	34,635	94,731	129,366	

Issues and Problems Associated with the Visual Management System. The system for managing the visual or scenic resource is a recent addition to Forest Service policy, having been published in April 1974. Because it is new, there is not yet a complete understanding of it among the forest officers charged with implementing the policy. Some feel that the system will unduly constrain management activities and that additional costs of land management activities attributed to meeting the visual quality objectives are not justified. Most however, have realized its value and are effectively using it in their project work with excellent results.

In preparing this kind of multiagency land use plan affecting both public and private lands, the Visual Management System might apply only to U.S. Forest Service lands. The other government agencies may agree to utilize the principles and methodologies on their lands within the planning unit.

On privately owned lands, scenic quality objectives may be more difficult to meet. Forest tree cover adjacent to major travel routes could be completely removed, creating a significant change in the scenic value of a travel corridor. Strip or other types of development could also occur, gradually changing a pastoral or forested landscape to one of structures and paved surfaces.

Clackamas County does have a policy which states that the visual character of roadway corridors and prominent ridgelines should be preserved. This policy needs to be strengthened. The same may be said for the State Forest Practices Act which does not have effective provisions for protecting outstanding scenic values.

Hood River County has a recommended policy regarding protection of visual resources in the Mt. Hood Planning Unit; however, no specific ordinances or policies have been adopted.

LAND USE ACTIVITIES

AGRICULTURE

Agriculture is an important segment of the planning unit's economy. With the exception of one farming unit on the westside, the majority of the farming takes place in the upper Hood River Valley. About 2200 acres of orchards and 400 acres of pasture lands are found in the portion of Hood River Valley located within the planning unit. Most of the land suitable for agricultural production in the valley is now used for that purpose, little additional land not presently used for agriculture is suitable for that purpose.

The farmland in Clackamas County is now being used for livestock grazing, pasture and tree farming.

Several estimates of potential pasture yield may be made depending on intensive or extensive management practices. The land suitability analysis showed approximately 450 acres of potential agriculture land in Clackamas County and was used in the following calculations for yield comparison purposes.

POTENTIAL PASTURE YIELDS						
	<u>Price/Ton*</u>		<u>Tons/Acre*</u>		<u>Acreage</u>	<u>\$ Value</u>
Irrigated						
Eastside	\$65	x	4.0	x	400	= \$104,000
Westside	42	x	5.0	x	450	94,500
Nonirrigated						
Eastside	65	x	2.0	x	400	52,000
Westside	42	x	2.5	x	450	47,250

*Estimates obtained from county extension agent and local ranchers.

Production figures for that portion of Hood River County in the planning unit are not available, but since about 14.9% of the orchard land is located within the planning unit, an estimation can be extrapolated.

	<u>Hood River County</u>	<u>Mt. Hood Planning Unit (est.)</u>
Apples	\$6,409,670	\$955,000
Winter pears	6,190,300	922,000
Bartlett pears	5,452,435	812,000
Cherries	1,328,340	
Other tree crops	100,000	14,000
Total Crops	\$19,480,745	\$2,703,000
Livestock and Products	<u>1,418,000</u>	<u>10,000</u>
TOTAL	\$20,898,745	\$2,713,000

Source: Oregon State Extension Service, 1974 figures.

The majority of the fruit produced in the Hood River Valley is for the fresh fruit market. Bartlett pears are the major contributor to the canning segment of agribusiness. Most of the fresh fruit is packed at Parkdale and Odell with two-thirds of the canning processed at Hood River; the balance of Vancouver and Sunnyside, Washington. From these plants, the fruit is shipped throughout the country; with a sizeable share exported.

Agricultural land is quite attractive to the potential residential home buyers. The level terrain and rural atmosphere contribute to this attraction. As a result, there is a significant demand for conversion of agricultural land to building sites. This factor can seriously affect the viability of the agriculture industry as it is now known.

Irrigation is a vital part of farm management, particularly orcharding. Virtually all of the orchards and most of the pastures are presently irrigated. When an orchard is not irrigated, productivity dramatically decreases and when the cost of production nearly equals the gross return, any reduction of production may jeopardize its agricultural use.

Orchard management, particularly spray drift, noise and dust control, cause substantial problems when close to residences. It is virtually impossible to completely control these problems within the confines of the orchard. Therefore, numerous nearby residences may cause a change of management techniques.

A report of commercial production from the Hood River Valley is given below for the season 1974-75 as compared with the crops of five previous years and total tonnage for the past ten years.

PRODUCT	# Bxs 1969-70	% %	# Bxs 1970-71	% %	# Bxs 1971-72	% %	# Bxs 1972-73	% %	# Bxs 1973-74	% %	# Bxs 1974-75	% %
Apples												
Newtowns	801019	43.2	523967	41.4	573567	38.4	496058	41.0	436332	28.5	391655	30.3
Golden delicious	187647	10.1	177555	14.0	169343	11.3	170004	14.0	103262	6.8	131064	10.1
Red delicious	863365	46.5	559294	44.1	747813	50.0	542452	44.7	987390	64.5	766135	59.3
Miscellaneous	2939	.2	6819	.5	7751	.3	2889	.3	2987	.2	2628	.3
TOTAL	1854970	100.0	1267635	100.0	1498474	100.0	1211403	100.0	1529971	100.0	1291482	100.0
Pears												
Bartletts	92923	4.0	33960	2.9	54307	2.6	210218	12.5	116037	5.3	85718	4.0
Bosc	132139	5.6	58958	5.0	122201	5.8	128338	7.6	98428	4.5	144424	6.6
Anjous	2090283	89.3	1086674	91.2	1907480	90.4	1324166	78.5	1954191	89.2	1923864	88.5
Miscellaneous	25287	1.1	11655	.9	25185	1.2	23965	1.4	23193	1.0	20738	.9
TOTAL	2340632	100.0	1191247	100.00	2109173	100.0	1686687	100.0	2191849	100.0	2174744	100.0
Cherries (FR)	152804	pk bx	139174	pk bx	197944	pk bx	184404	pk bx	180326	pk bx	48675	pk bx
Bartletts (CND)	33371	tons	22515	tons	42631	tons	29227	tons	30416	tons	35727	tons
Cherries (CND)	1243	tons	751	tons	628	tons	644	tons	554	tons	973	tons
Apples (CND)	15780	tons	12120	tons	10711	tons	6766	tons	24013	tons	25449	tons

COMPARISON PRODUCTION - BXS

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Apples	1021617	1376437	1700769	1572993	1148619	1854970	1267635	1498474	1211403	1529971	1291482
Pears	822275	1500289	1609224	1469945	1022670	2340632	1191247	2109173	1686687	2191849	2174744

Source: Hood River Grower-Shipper Assn (1974 figures).

TIMBER MANAGEMENT

Most of the Mt. Hood Planning Unit is forested. About 116,600 of the 158,000 acres contain stands of timber high sustain timber production.

The principal forest types are: (1) Douglas-fir with western hemlock, western red cedar, big leaf maple and red alder in the lower western portion of the planning unit; (b) Douglas-fir, grand fir, silver fir extending upslope in the western portion and some of the eastern slopes; (c) noble fir and silver fir with lodgepole pine as an early stage species in the higher elevations and particularly north slopes; (d) mountain hemlock, subalpine fir and limited white bark pine in the upper slopes approaching timberline; (e) eastern transition type containing Douglas-fir, western larch, ponderosa pine and grand fir. Further descriptions of the plant communities are covered under vegetation.

National Forest. The site productivity on national forest lands now committed to timber harvest (60,500 acres) is about average. The present assignment for annual allowable harvest within the planning unit is about 23,500 MBF (Scribner Decimal C rule). This planning unit provides about 8% of the Mt. Hood National Forest annual harvest.

Presently, the principal harvest methods used are clearcutting of mature and overmature timber, reforestation by planting, thinning young overstocked stands of trees, salvage of dead and dying timber, shelterwood and the use of group selection* harvest system in the high elevation and sensitive landscape areas.

The principal forest management problems have come from developing the best way to meet multiple use objectives and in informing and involvement of the public in implementing the practices.

Bureau of Land Management. The lands administered by the Bureau are lower in elevation. Principally, Douglas-fir, western hemlock, western red cedar, big leaf maple and red alder. These sites are generally more productive than the Forest Service acreage. The silvicultural systems* and management objectives on Bureau land and National Forests are very similar.

State of Oregon Land. The State of Oregon lands are within Hood River County and principally the eastern transition forests. The productive capacity of those lands is slightly lower than National Forest average. There are about 600 acres of state land dedicated to commercial production. The economic returns for these properties is shown on the alternative evaluations.

Hood River and Clackamas Counties. Hood River has about 2200 acres in commercial forests. The forests are usually eastside transition forests with yield less than the National Forest average.

Clackamas County has about 1100 acres in available commercial forest lands.* These are Douglas-fir forests with yields higher than the National Forest average.

* See Glossary

Private Lands. There are approximately 6000 acres of private land in Clackamas County now available for commercial forest production. Most of these are higher site class Douglas-fir forests.

Private lands in Hood River County contain 2400 acres of available commercial forest land. These are Eastern Oregon transition forests.

The demand for timber products is stated in figure 5 . The projections presented are not specifically applicable to the Mt. Hood Planning Unit and therefore, should be used only as an indication of trends.

Figure portrays the cumulative effect of unit planning on timber harvesting in unroaded areas.

Figure 5

Summary of roundwood consumption by species group and major product, 1952 and 1970 with projections of demand (medium level¹) under alternative price assumptions to 2000.^{1/}

Billion Cubic Feet, Roundwood Equivalent												
Species group and product	1952	1962	1970	Projections								
				1970 relative prices			Rising relative prices 2/			Relative prices above 1970 averages 3/		
				1980	1990	2000	1980	1990	2000	1980	1990	2000
SOFTWOODS												
Saw logs	5.0	4.8	5.0	6.1	6.7	7.0	5.3	5.3	5.0	5.0	5.6	5.9
Veneer logs . . . . .	.2	.6	.9	1.4	1.7	1.9	1.3	1.4	1.5	1.2	1.4	1.5
Pulpwood 4/	2.4	2.6	3.4	4.2	5.3	6.5	4.2	5.4	6.7	4.2	5.4	6.6
Miscellaneous products 5/ . . . . .	.3	.3	.2	.3	.3	.3	.3	.2	.2	.2	.2	.2
Fuelwood . . . . .	.5	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
TOTAL 6/												
	8.4	8.5	9.7	12.1	14.1	15.8	11.2	12.4	13.5	10.7	12.7	14.3

1/ Based on the medium projections of growth in population and economic activity shown in the introductory section of this chapter.

2/ Relative prices rising from 1970 trend levels as follows: lumber -1.5 percent per year; plywood, miscellaneous products, and fuelwood - 1.0 percent per year; paper and board -0.5 percent per year.

3/ Relative prices of lumber and plywood - 30 percent, miscellaneous products and fuelwood - 15 percent, and paper and board - 10 percent, above the 1970 averages.

4/ Includes both pulpwood and the pulpwood equivalent of the net imports of woodpulp, paper and board.

5/ Includes cooperage, logs, poles, piling, fence posts, hewn ties, round mine timbers, box bolts, excelsior bolts, chemical wood, shingle bolts, and other miscellaneous items.

6/ Includes imported logs not shown by major product use.

Note: Data may not add to totals because of rounding.

Sources: 1952, 1962, and 1970 - Based on data published by the U.S. Departments of Commerce and Agriculture
Projections: U.S. Department of Agriculture, Forest Service.

1/ The Outlook for Timber in the United States. USDA. October 1973. Forest Resource Report #20.

Figure 6

AREA	NF Gross Acres	Prior CFL for Plng Unit	1A	3/ Adjusted CFL Base	Unroaded Areas	Unroaded CFL	No Decision To Date			Decisions Rendered To Date			
							Unroaded CFL Acres	Lo MMBF	Hi MMBF	+ CFL	10/	Lo MMBF	Hi MMBF
Badger-Jordan	51010	43884		43884	Badger	20100	20100 4/	7	11				
Bull Run	72625	63775		63775	Lake Big Bend	7130 9500	16070 4/	6	9		560		
Clackamas	350950	291314 2/		296426	Bull/Woods	24260 1650	19132 4/	7	10		6778 7/	2	4
Eagle Creek	61984	53360		25560	Eagle Gorge	38344 4980					43324 8/	(14)	(24)
East Hood River	16219	15500		15500									
Eightmile	28665	24984 2/		25407									
Huckleberry	28451	28000		28000	Eagle-Hcklberry	19820				19820 5/			
Larch Mtn-Bull Run	29713	25010		25010	Gorge	4950				2134 9/	1	1	2
Lava	57404	39897 2/		40573									
Mt. Hood	120200	90200		64404	ZZ Mtn Slmn Rvr Mt. Hood	15270 7326 9780	7326 4/	2	4		25050	9	14
Roaring River	32731	23991		23991	Rrng Rvr	23370				7687 6/	3	4	8
Salmon River	48271	33582		33582	Slmn Rvr	27034				16311 6/	6	9	6
The Dalles	18511	12035		12035									
White River	142616	124308 2/		126413	Twn Lakes	4830	4830 4/	2	3				
Forest Total	1059350	869840		824204		218344	67458 4/			45952 9/	17	23	34
													(24)
													58

ESTIMATED FOREST TIMBER OUTPUT: Adjusted base, Low 285 MMBF, High 450 MMBF; Potential loss in remaining unroaded areas, Low 23 MMBF, High 36 MMBF.

- Commercial forest land acres prior to unit plan decision but including adjustments from recent timber inventory. Includes roaded and unroaded area in Planning Unit.
- Prior CFL acres determined by proportioning difference between total CFL (869840) and calculated acres in studies.
- Adjustments made to recognize unit plan decisions and the designated wilderness study areas. The acreage difference between the actual CFL base (824204) and the studies where acreages have been determined by field inventories was proportioned to the remaining four units (see units where footnote 2 is indicated).
- Unroaded CFL where no decision has been made.
- 9770 acres unroaded area committed to commercial harvest through unit plan decisions. Cheney Creek Area (10050 acres) to remain in CFL base as marginal and commercial forest but without plans for harvest for ten years.
- Unroaded area committed to commercial harvest through unit plan decisions.
- Recommended special interest scenic area Bull of the Woods which has been removed from CFL base.
- Eagle Creek unroaded area which was not in the old or new timber CFL base. Parentheses under -CFL, Lo-Hi indicate potential.
- Remains in CFL but without plans for harvest. Will be reviewed in 1981.
- + programable CFL (standard, special and marginal); -CFL not programable (unregulated, deferred and reserved).

RECREATION

Trails throughout the area offer generally good hiking opportunities. Short hikes such as to Tamanawaus Falls are available in the East Fork as well as long hikes along the Timberline Trail. There are 207 miles of trails available in summer in the roadless areas in Clackamas County. There are no winter and spring trails available. 170 miles of trail are presently open to motorized vehicles. Hood River County has 57 miles of hiking trails with approximately 20% of the trails open to horses and four miles open to motorized travel.

There are opportunities for some winter sports activities such as snow playing and snowshoe and crosscountry skiing. Snow play areas are generally overcrowded and the unreliable snow at the few existing areas are the main drawbacks. There is a potential for good snow play areas but they have not been developed. Snowshoe and crosscountry skiing opportunities are few. The heavier snow conditions are good for this activity but the lack of parking and marked continuous loop trails are limiting.

Fishing opportunities exist in the planning unit, but are dependent on the stocking of planted fish. There is heavy pressure on the few opportunities which are available.

Hunting is generally poor in the unit because of the scarcity of game, dense cover and difficult hunting conditions.

Sufficient number of primitive camping sites are present but there is limited provision for modern facilities sought by tourists with contemporary recreation vehicles. Most campgrounds have primitive facilities and are unattractive to some. Others find them appropriate to their needs as evidenced by the heavy use. Many opportunities for backpack camping are available along the trails emanating from the camp spots.

Excellent opportunities exist in the category of driving for pleasure. The most outstanding drive occurs on the state highway system looping south of Mt. Hood. A variety of other driving experiences may be gained by using the secondary roads and logging roads which exist throughout the planning unit.

The opportunities for water sports within the planning unit are very limited. Trillium Lake offers opportunities for canoeing and rafting. However, there are no power, sailboat or river rafting areas. There is little chance for growth in this activity due to the heavy peak use on the few facilities available.

There are a variety of opportunities in the area for mountaineering. Mt. Hood is crowded due to its ease of access and close proximity to the metropolitan area. The true mountaineering devotee finds Mt. Hood a good place for training and practice, while the novice finds it quite a challenge.

Opportunities for resort type activities exist in several places in the planning unit. Bowman's Resort offers an outstanding golf course in addition to its other facilities. Expansion of Bowman's to provide an additional nine holes

has recently been approved by Clackamas County. Timberline Lodge offers a variety of resort activities including skiing, swimming, dining and overnight accommodations.

Picnicking opportunities within the planning unit are relatively limited, at least in the developed situations. A major facility managed by the Bureau of Land Management is called Wildwood and is the only large development. Most picnicking within the unit occurs either at campgrounds or at undesignated spots along roadways and trails.

A major recreation feature of the planning unit is the unroaded natural environment. A rudimentary network of trails provides access to points of interest and natural attractions at higher elevations. Lakes, streams, waterfalls, mountain peaks and alpine meadows serve as the main attractions. Clean, clear water, solitude, wildlife variety, quietness, fresh air and natural scenery are the basic component to the recreation opportunity.

About 30% of the recreation visits to the area involve overnight stays. A broad range of activities rather than a few major activities occur in the planning unit. This reflects the orientation of the planning unit to the Portland-Vancouver metropolitan area as predominantly a short term experience. Although accurate figures are not available, the percentage of visitors from outside Oregon is about 15%. Day use emphasis is expected to take a greater share of the total because the local metropolitan area is growing at a greater rate than visitors from outside the region are being attracted.

Very little recreation on private land for the public and resident communities is provided within the planning unit. Private investments in skiing on public land are the general rule. A limited recreation season and competition from low priced overen free public facilities have to date inhibited recreation investments on private land. Opportunities for private operations may become feasible for camping, snow play and horseback riding as the area becomes crowded enough to warrant these facilities and if public facilities do not further preempt the field.

Dispersed recreation activities occur on private lands and may take the form of snowshoeing, crosscountry skiing and wood cutting.

Many people take advantage of the wildlife viewing available throughout the planning unit. This viewing occurs as an organized, planned activity as well as a secondary benefit to other recreation activities. Its recreational value is great, the experience often becoming the most rewarding part of their trip.

Within the planning unit there is a lack of community recreation facilities oriented to the residents.

Figure 7

SITE	PAOT Capacity	Elevation (feet)	Season	Popularity Rating	Nearby Attractions	Cond. of Facil.	Use Patterns	Ownership	1974 VUD (12 hr)
CAMPGROUNDS									
Alpine	50	5400	7/15-9/30	Fair	Good	Poor	Base camp for climbers & backpackers	FS	4600
Camp Creek	175	2200	5/15-9/30	Fair	Fair	Poor	Weekend & highway traveler	FS	3000
Cloud Cap Saddle	15	6000	7/1-10/15	Excel	Excel	Poor	Heavy weekend, trailhead use	FS	600
Hood River Meadows	40	4400	6/15-10/15	Good	Good	Poor	Day use, trailhead use	FS	2800*
McNeil	185	2000	5/1-9/30	Fair	Fair	Poor	Spring, fall best; summer hot & dusty	FS	2700
Polallie	50	3000	5/15-10/15	Good	Good	Fair	Pit stop, 24 hour use	FS	2800*
Riley	110	2100	5/1-9/30	Good	Fair	Fair	Horse camp, horses in units w/campers	FS	3800
Robinhood	120	3600	6/1-10/15	Good	Fair	Good	Overnight (24 hour weekend use)	FS	4600*
Routson	120	2700	5/15-10/15	Fair	Fair	Fair	Agricultural workers mostly	County	
Sherwood	190	3100	5/15-10/30	Good	Good	Fair	Pit stop, rest stop, some 24 hour	FS	6600
Still Creek	80	3600	6/15-9/30	Poor	Fair	Poor	Weekend overflow, Trillium, never full	FS	3700
Tilly Jane	80	5600	7/1-10/15	Fair	Excel	Poor	Weekend use, day use	FS	2800
Toll Bridge	75	1800	4/1-11/1	Good	Fair	Good	Agricultural workers mostly	County	
Toll Gate	220	1800	5/1-9/30	Fair	Fair	Poor	Weekend & highway	FS	7100
Trillium Lake	220	3600	6/1-9/30	Excel	Excel	Fair	Destination attraction, crowded week-ends & holidays	FS	27,000
PICNIC AREAS									
Clear Creek	50	1500	5/1-9/30	Poor	Poor	Poor	Rarely used	FS	200
Cloud Cap Parking	30	6000	7/1-10/15	Excel	Excel	Poor	Heavy day use in good weather	FS	4600
Barlow Toll Gate	50	1800	5/1-9/30	Good	Fair	Fair	Highway travelers	FS	700
Lost Creek	40	3000	5/1-9/30	Fair	Good	Good	Handicapped facilities	FS	100
Wildwood	1185	1300	5/1-10/1	Excel	Excel	Excel	Capacity on weekends, little week use	BLM	27000
SKI AREAS									
Cooper Spur	250	4200	12/15-4/15	Good	Fr/Gd	Good	Local & get away from crowds skiers	Pvt/FS	1500**
Glade-Alpine Trails	1200	4-6000	12/15-4/1	Good	N/A	Fair	No charge, moderate use	FS	
Mt. Hood Meadows	4000	5500	10/15-6/30	Gd/Exc	Excel	Gd/Exc	Heavy weekend use, good weekday	Pvt/FS	67000**
Red Devil	100	3800	12/15-3/31	Fair	N/A	Fair	Weekends only	Pvt/FS	
Summit	200	3800	12/15-3/31	Good	N/A	Fair	Congested weekends, no charge	Pvt/FS	
Summit	800	4000	12/15-4/1	Fair	N/A	Fair	Open Saturday, Sunday, Holidays only	Pvt/FS	
Timberline	3400	6000	11/15-5/15	Good	N/A	Good	Most on weekends	Pvt/FS	
Multorpor-Ski Bowl	3100	3800	12/15-4/1	Good	N/A	Good	Weekends, nights best, little in week	Pvt/FS	
SNOWPLAY									
Snowbunny Lodge	300	3800	12/15-3/31	Fair	N/A	Fair	Weekends & Holidays only	Club/FS	
ORGANIZATION SITES									
American Legion	30	5600	7/1-9/15	Fair	Excel	Poor	Weekends (2-3 times/year)	FS	100
Cloud Cap (Crag Rates)	55	6000	Yr long	Excel	Excel	Fair	Weekends, summer & winter	Pub Srv	3300
Kiwanis (handicapped)	57	3000	Yr long	Good	Fair	Poor	Heavy summer	Club/FS	
Mazama	90	4100	Yr long	Excel	Good	Excel	Weekends	BSA	
Nanitch BSA	80	4200	Yr long	Good	Good	Good	Weekends, winter	BSA	
Phlox Point BSA	15	5600	Yr long	Good	Good	Poor	Weekends, winter	BSA	
Seventh Day Adventist	25	2800	Yr long	Fair	Fair	Fair	Weekends	Church	
Snowshoe Club	25	6000	Yr long	Excel	Excel	Good	Weekend, summer (some winter)	Pvt/FS	1000**
Tilly Jane (Alpinees)	20	5600	Yr long	Good	Excel	Fair	Weekend use, summer & winter	FS	1000**
Tilly Jane Warming Hut	30	5600	Yr long	Good	Excel	Poor	Weekend use, winter mainly	FS	600**
Trails Club	50	4200	Yr long	Good	Good	Excel	Weekends	Club/FS	
White River BSA	250	4300	Yr long	Excel	Good	Excel	Weekends, winter	BSA	
Wy'east	24	5400	Yr long	Good	Good	Poor	Winter weekends	Club/FS	

* Open only on weekends in 1974.

** Adjusted use figures.

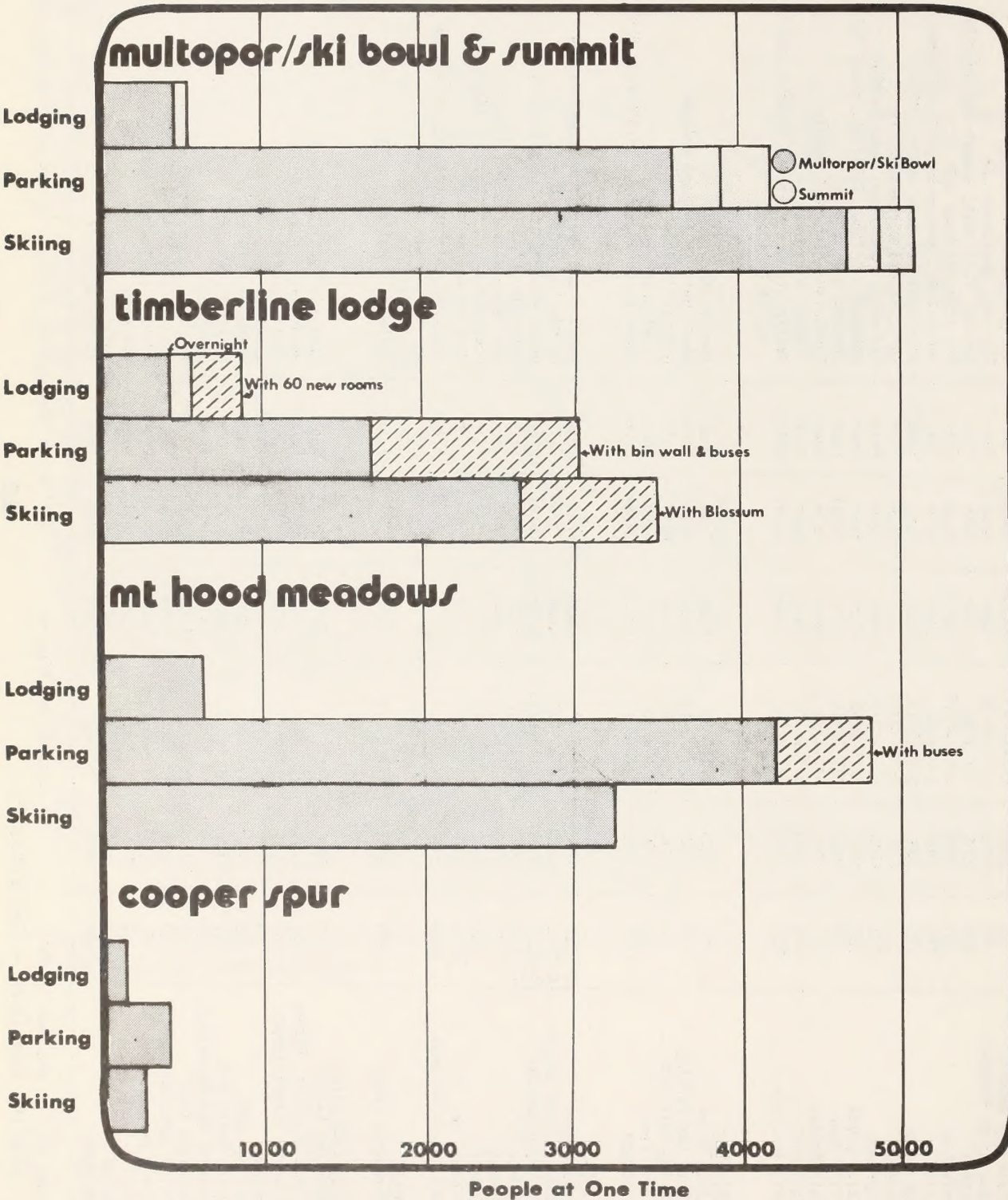
{All other than BLM and County, located on Forest Service land.}

1/ Visitor Use Days - See Glossary

FIG. 7a

Ski System Capacities

MT HOOD PLANNING UNIT



MT. HOOD PLANNING UNIT



RECREATION

- Campground
- Picnic Area
- Winter Sports Area
- Organizational Site
- Trail
- Roadless Areas
- Mt Hood Addition
- Zig Zag
- Skiing Permit Area

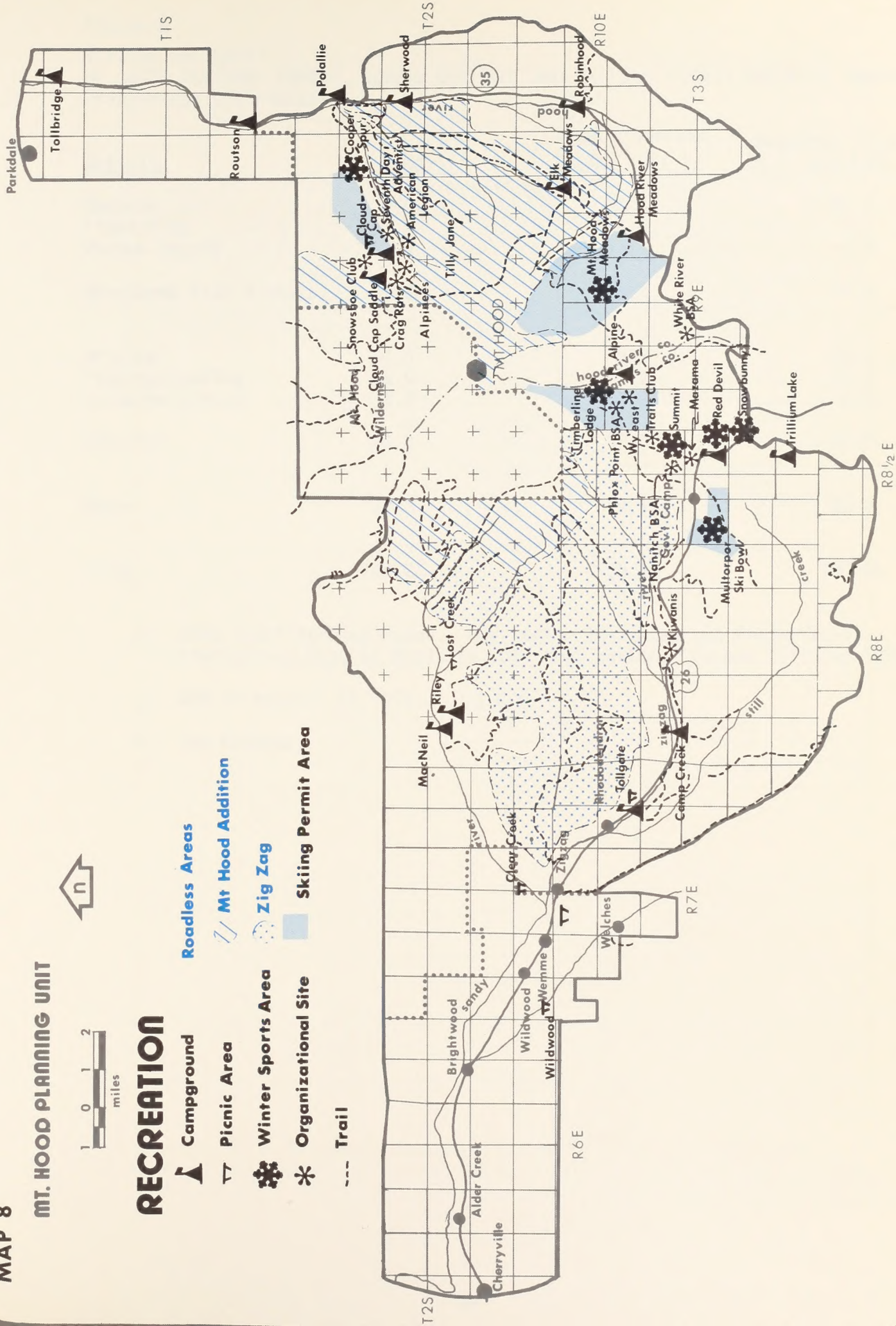


Figure 8

VISITOR USE DAYS*

MT. HOOD NATIONAL FOREST, ZIGZAG DISTRICT AND NATIONAL FOREST AVERAGES COMPARED
(Percentage Distribution)

Activity	Mt. Hood 1/	Hood River and Zigzag 1974 2/	National Forests (U.S. Ave 1971 1/)
Camping	9.0	25.4	24.0
Picnicking	15.2	5.8	4.0
Winter sports	7.0	17.1	6.0
Developed Site Subtotal	31.2	48.3	34.0
Driving	30.0	1.3	26.0
Fishing/Hunting	4.0	7.2	14.0
Horse/Walk/Hike	6.0	23.9	6.0
Subtotal	40.0	32.4	46.0
Other	28.8	19.3	20.0
TOTAL	100.0%	100.0%	100.0%

1/ CRAG Staff Working Paper. May 1974. Estimates and Projections
Visitor Use Days by Activity, Mt. Hood National Forest 1970 and 1990.

2/ RIM Printouts, CY 1974. U.S.F.S.

* See Glossary

Projected Recreation Demands

The planning unit accounts for about 45% of all recreation activity in the Mt. Hood National Forest. Although attractive opportunities abound elsewhere, inertia and proximity factors will sustain this percentage.

Greatest recreation demands by activity in the planning unit are for camping, hunting, hiking, horseback riding (trail), snow activities, fishing and pleasure driving. Moderate demands for boating, skiing, picnicking, golf, outdoor games and open country horseback riding are indicated. (Oregon Outdoor Recreation Study)

The following is an allocation of the additional recreation facilities needed to meet demand by 1990s. (Wildwood Recreation Site Feasibility Study, Wilsey and Ham.)

Boating (launch lane)	8
Camping (unit)	1285
Picnicking (unit)	204
Hiking (trail mile)	132
Horseback riding (trail mile)	160
Golf (holes)	54

Demand analysis for the planning unit leads to the following conclusions:

1. The greatest unmet demand is for overnight camping. With 582 units in the planning unit now, 1285 is the projected need by 1990. (Wildwood Recreation Site Feasibility Study, Wilsey and Ham.) Camping facilities which provide a range of experiences from primitive to modern are needed in the planning unit.
2. There are now 207 miles of hiking and horseback riding trails in Clackamas County and a projected need for 160 miles of additional dual purpose (hike, horse) trails by 1990. Although a 335% increase in use for the Mt. Hood National Forest was recorded between 1965 and 1972, much of the indicated future growth must be accommodated outside the planning unit.
3. Snow sport (other than downhill skiing) opportunities must double by 1990 to meet demand. This projection is based on use statistics (Forest Service) for the last ten years which show a 6.3% annual use increase.
4. 204 picnic units must be added to the present 385 in the planning unit by 1990 to meet projected demand.
5. Along with the increases in housing and population levels goes an inherent need for more "urban" or community type recreation facilities.
6. Three new 18 hole golf courses will be needed by 1990 to augment the existing 18 holes.
7. Demand for hunting and fishing, although moderately high, cannot be satisfied in the planning unit. The resources for these activities are presently fully utilized.

8. There is currently a great demand for wildlife viewing opportunities. A recent study (Oregon Wildlife 1975) stated that 93% of Oregonians participate in some form of wildlife viewing. The demand may be expected to increase with the population levels although the wildlife diversity will diminish.

9. All the indications in the skiing business at Mt. Hood lead us to believe that there is a strong demand for skiing opportunities. The capacity of the existing permit areas could allow a doubling of use. There is congestion on the better days and if facilities are added, they will be used. A major concern is that additional facilities to accommodate peak skier visits will be marginally less profitable because operators cannot afford to provide more facilities for peak occurrences when those facilities may be idle on the majority of days.

Based on Forest Service use statistics, skiing visits have increased an average of 6% annually for the last ten years. There have been wide use fluctuations from year to year. Projecting a 6% increase is felt to be a conservative but fair representative projected estimate. Therefore, skiing use is projected for a 120% increase in the next 20 years. This assumes that parking facilities and needed transportation modes will be available.

Because of limited resources and the need to provide quality experiences, the projected demands for the planning unit may not be met.

WILDERNESS

The Mt. Hood Wilderness encompasses about 14,000 acres of Mt. Hood proper. In comparison with other wilderness, the Mt. Hood is a small, compact area. There are 12 entry points and access from any trailhead is short -- two hours or less. In addition, the Timberline Trail runs in and out of the area (see Map 8).

Recreation use of the area averages about 50,000 visitor days a year. The number of visitors fluctuates with the length of the summer season. There is heavy day use in the wilderness and the majority of use is on weekends. Focal points of interest are the open meadows and the shelters that still remain.

The Timberline Trail receives heavy hiker use. The numbers of people using this trail generally preclude an isolated wilderness experience. It is essentially a corridor of concentrated activity with wilderness qualities above and below it.

A major administrative problem is protection and maintenance of the wilderness resource. Heavy recreation use has created problems in terms of human and solid wastes, trampling of fragile meadows and streamside areas, etc. There are wilderness regulations. However, visitor disregard for these is also a problem. As visitor use of the wilderness continues to increase, these problems will grow more acute.

ROADLESS AREA REVIEW

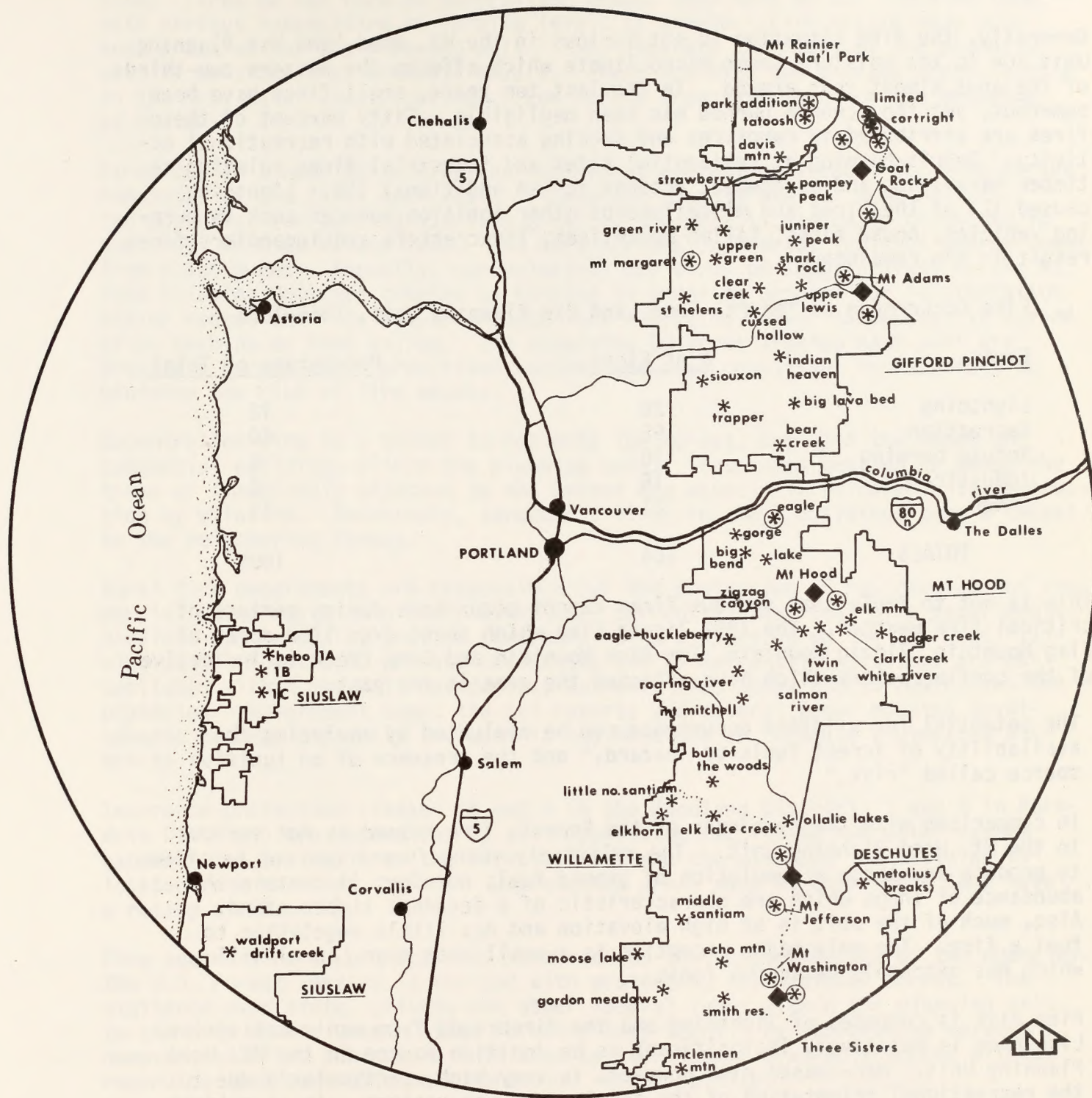
In 1972, the U.S. Forest Service inventoried all roadless and undeveloped areas, 5000 acres or larger, within National Forest boundaries. These lands were evaluated for further study for possible inclusion in the National Wilderness Preservation system.

Within the Mt. Hood Planning Unit are two Wilderness Study Areas (WSA). The Zigzag WSA lies to the west of Mt. Hood and encompasses 15,270 acres. The Mt. Hood WSA lies both east and west of the existing Mt. Hood Wilderness and encompasses 9780 acres. These areas will be evaluated under the established Wilderness Study Area procedures and a separate report prepared.

Land use planning on the Mt. Hood Forest has resulted in management decisions for four roadless areas; Eagle, Gorge, Roaring River and Salmon River. The chart on page 48 indicates the effects of decisions through unit planning on commercial forest land and harvest in the unroaded areas.

Within 100 air miles of Portland, Oregon there are 614,305 acres of nonselected roadless area; 136,220 acres allocated as Wilderness Study Areas; and 482,214 acres of classified wilderness. Although not completely within the 100 mile radius, there are 235,404 acres in Mt. Rainier National Park. These areas are presently available for roadless, backcountry type recreation.

*See Glossary



* WITHIN 100 MILES OF PORTLAND

* NON SELECTED ROADLESS AREA

⊛ WILDERNESS STUDY AREA

◆ CLASSIFIED WILDERNESS

FIRE MANAGEMENT

Generally, the fire situation is not serious in the Mt. Hood Land Use Planning Unit due to the moisture laden microclimate which affects the western two-thirds of the area almost year around. In the last ten years, small fires have been numerous, yet the acreage burned has been negligible. Sixty percent of these fires are attributed to campfires and smoking associated with recreational activity. Debris burning at residential sites and industrial fires relating to timber harvesting and management account for an additional 15%. Lightning caused 12% of the fires and miscellaneous other ignition sources such as burning vehicles, house fires, fallen powerlines, firecrackers and incendiary fires result in the remainder.

Fire Occurrence on the Mt. Hood Land Use Planning Unit, 1965-1975

<u>Cause</u>	<u># of Fires</u>	<u>Percentage of Total</u>
Lightning	20	12
Recreation	98	60
Refuse burning	10	6
Industrial	15	9
Other	21	13
TOTALS	164	100%

This is not to imply that serious fires cannot occur here during periods of critical fire weather. The 1952 Zigzag Fire which swept over 1750 acres of Flag Mountain, Zigzag Mountain, Tom-Dick Mountain and Camp Creek is indicative of the conflagrations which have affected the area in the past.

The potential for wildfire occurrence can be evaluated by analyzing the availability of forest fuels or "hazard," and the presence of an ignition source called "risk."

In comparison with the remainder of the Forest, fire hazard is not serious in the Mt. Hood Planning Unit. The relatively young forest has not had time to produce any large accumulation of ground fuel; nor does it contain the abundance of snags which are characteristic of a decadent timber stand. Also, much of the unit is at high elevation and has little vegetation to fuel a fire. The only major exception is a small area near Laurel Hill which has extremely hazardous fuels.

Fire risk is composed of lightning and the firebrands from man's activities. Lightning is relatively insignificant as an ignition source in the Mt. Hood Planning Unit. Man-caused risk however, is very high, particularly due to the recreational orientation of the area's land use pattern. It is evident that the vast majority of fires are caused by people participating in outdoor recreational activities.

Fortunately, most of these fires have been in readily accessible areas and resulted in little or no damage due to timely detection and suppression. The potential for serious resource damage is great however, as ever-increasing numbers of Forest visitors frequent the trails and campsites of the back-country where limited access makes speedy suppression difficult.

The relative fire potential in the Mt. Hood Planning Unit is beyond generalization. Fires do not burn on generalized areas, they burn on all types of land with various intensities of varying levels of damage. Fire hazard maps have been prepared for the planning unit. They indicate that most of the planning unit is considered as moderate hazard. There are high and extreme areas, mostly in the Hood River County portion. Low hazard areas are found on the westside of the unit.

Fires due to timber harvesting and management operations account for most of the remainder of the fires each year. These are usually small. Nonetheless, the potential for conflagration is great as the work is generally conducted in the midst of high hazard fuel. The most serious industrial ignition source comes from slash burns. Annually, approximately 200 acres of logging slash on the Mt. Hood Planning Unit are treated by burning in order to prepare for reforestation and/or reduce the fire hazard through fuel reduction. Over 75 percent is burned after machine or hand piling. The remaining 50 acres treated each year are broadcast burned under prescribed weather and fuel conditions in an effort to minimize the risk of fire escape.

Uncontrolled fire is a threat to not only the Forest, but also the homes and commercial buildings within the planning unit. Structures nestled in among the trees or immediately adjacent to the Forest are especially vulnerable to destruction by wildfire. Conversely, structural fires in these buildings pose a threat to the neighboring forest.

Rural fire departments are responsible for the protection of residential and commercial buildings within their district. Currently, two rural fire departments, Hoodland and Parkdale, provide structural fire protection on the Mt. Hood Planning Unit. About 2700 private residences and 75 mercantile buildings are established within the unit boundaries, but only 2400 homes and 55 businesses are protected. Government Camp, the ski resorts and several newer housing developments are not presently included in the Hoodland or Parkdale Protection Districts.

Insurance protection classes (8 and 9 in the Hoodland District; 7 and 8 in Parkdale District) are determined by the suppression facilities and water system capabilities available on the fire district and the distance the building is located from the fire station. Unprotected areas such as Government Camp have a rating of Class 10.

Fire suppression to protect land resources is the responsibility of two agencies. The U.S. Forest Service is charged with protecting the National Forest. The vigilance over state, private and other federal lands within the planning unit is the duty of the Oregon State Forestry Department. By cooperative agreement however, wildfire control is initiated by the closest available forces without regard to land ownership or suppression responsibility.

An extensive network of wildfire control facilities exists for the protection of the planning unit. Fire crews with water tankers are located within the planning unit at Zigzag, Government Camp, Long Prairie and along the East Fork of Hood River as well as at Lost Lake and Wahtum Lake outside the unit. In order to make a rapid initial attack on fires in remote areas, a trained helitack crew is based at Parkdale. A similar crew is located south of the planning unit at Ripplebrook. Consequently, suppression forces can be at the scene of a wildfire within 30 minutes of its detection.

HOUSING

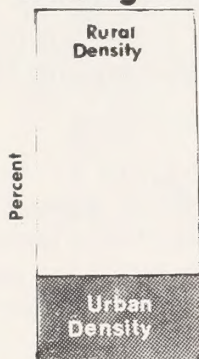
Housing is one of the most significant parts of Mt. Hood's man-made environment. Demand for housing comes from several sources; employees of local businesses and government, retired persons, farm families and migrant workers, and persons living outside the area who see it as a second or seasonal home site.

The housing pattern is atypical. This applies particularly to the westside corridor where vacation homes comprise about half of the total mix. It becomes something of an advantage, for demands on schools and other public services are not as great if all houses were occupied year-round. A trend toward a higher permanent occupancy should be expected, however, due to the proximity and growth of metropolitan Portland.

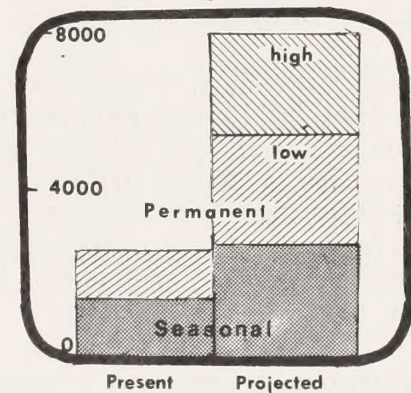
It is estimated that there are 1300 homes occupied year around in the Mt. Hood area, with approximately 1200 seasonal homes (vacation, weekend, overnight) and 150 migrant units providing the balance of the housing stock. The report "Population Projections, Housing, Needs and Capacity in the Mt. Hood Planning Unit" prepared by the CRAG, Clackamas and Hood River County Planning staffs, indicates a potential growth of 1200 to 2400 recreational units in the next 25 years. Total housing for the same period is projected to range from a low of 5300 and a high of 7900.

A high percentage (30-40%) of the housing fails to meet county building standards reflecting the absentee ownership pattern and older cabin construction dating back to 1930s. Many of these are poorly insulated and lack plumbing. New housing construction and sites are becoming increasingly more expensive, as is the case throughout the metropolitan region.

Developed Housing Area

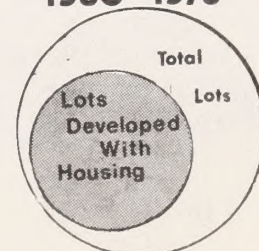


Housing Units



About 2500 acres of land are in residential use today (built-out) within the area encompassed by the proposed interagency plan. Large portions of designated and platted (but unbuilt) residential areas remain to be filled in over future years. Twenty-four subdivisions were platted in period of 1967 to 1974, creating 790 new lots which are being built on at the rate of <10% per year.

Westside Subdivisions 1930 - 1975



The available overnight lodging accommodations within the planning unit are primarily located at Government Camp, Welches and Rhododendron, all on the westside. Timberline Lodge has 56 units available and is proposed to eventually have 120 units. The total number of units on private land is approximately 240, including condominiums and motels.

Additional overnight facilities could help to disperse recreation usage throughout the week, reducing overloads and peak demands on the weekends. The main problems at present center around limited sanitary sewer facilities which has hampered new construction and the trend toward luxury condominiums instead of hostel-like lodging which is affordable, in keeping with the mountain's character and convenient to main activity areas. Government should not be in the business of subsidizing such housing, but if the private sector fails to meet the need, then it may have to be a consideration.

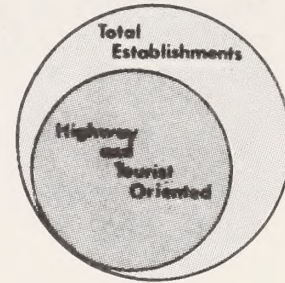
COMMERCIAL

There are two basic types of commercial activity intermixed in the Mt. Hood area: tourist commercial enterprises such as motels and restaurants; and general commercial uses including retail stores and services for the resident communities.

Overall Commercial demands fluctuate with the seasons and during the week as in many recreational areas. Growth in new commercial services will be in direct proportion to the increase of tourists, seasonal homeownerships and permanent residents.

The largest concentrations of commercial use are found in Rhododendron, Government Camp, Parkdale and along a three-mile stretch of Highway 26 in the Wildwood, Wemme and Zigzag areas.

Additional smaller commercial areas are located at Alder Creek, Sleepy Hollow, Brightwood, Bowman's Resort and Mt. Hood (immediately north of the planning unit on Highway 35).



The present amount of designated commercial land within existing centers is about 55 acres, a high percentage of which is vacant or underutilized. Government Camp has the greatest amount of commercial designation with approximately 20 acres so indicated. This is broken down as follows: 10% in old Highway 26 right-of-way; 35% built up; and 55% noncommercial or vacant.

Strip development (particularly commercial activities) along Highway 26 in the westside corridor is of major concern since it contributes to congestion and presents a poor image to the traveling public. Some of the problems which directly relate to the present condition are the numerous ill-defined and uncontrolled points of highway access; the many unrelated styles of architecture, landscaping (if any) and signing; the uncoordinated traffic circulation and parking arrangements within commercial areas; the unfinished or cluttered appearance of some existing commercial developments and the indiscriminate grading or clearing of land and tree cutting in several key highway sections. Much of this could be improved upon with cooperative site planning and community effort.

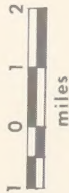
LAND OWNERSHIP ADJUSTMENT

On National Forest lands, land ownership adjustment is often necessary to promote more efficient management and utilization of resources, or to meet specific management needs in key tracts or areas. Activities involved are recreation; sustained yield timber management; established game management; municipal watersheds, flood control projects; and wilderness, reserved or other defined management areas. Urgent problems of resource protection and conservation can sometimes be achieved by land adjustment and making these lands public. A good example would be implementing the purpose of the Endangered Species Act of 1973. Adjustment in land pattern can also eliminate or reduce forest fire risk and soil erosion or trespass hazards. It can also insure access to public lands and resources and promote economies in local governments.

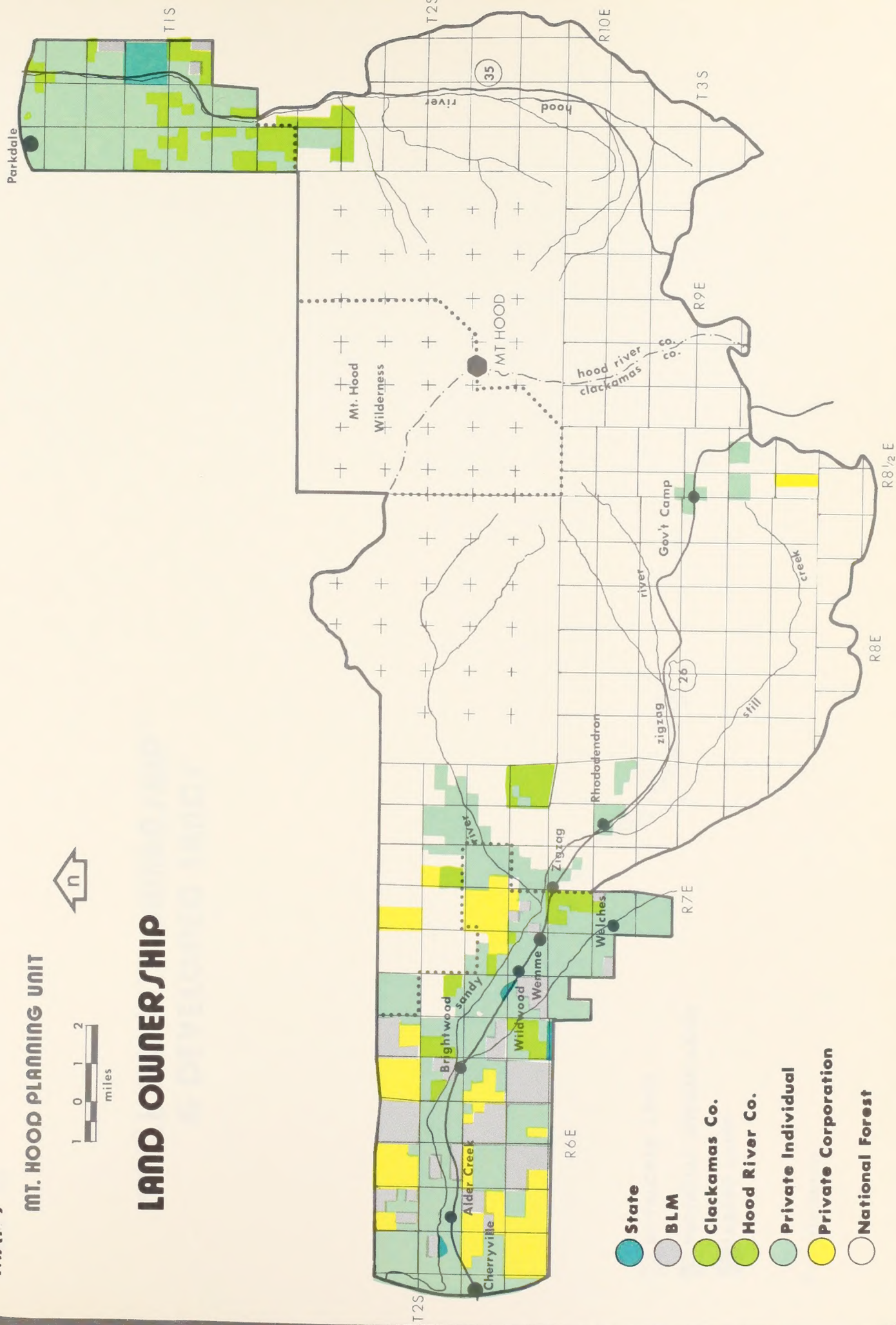
A detailed report on current projects and procedures may be found in the Appendix.

MAP 9

MT. HOOD PLANNING UNIT



LAND OWNERSHIP

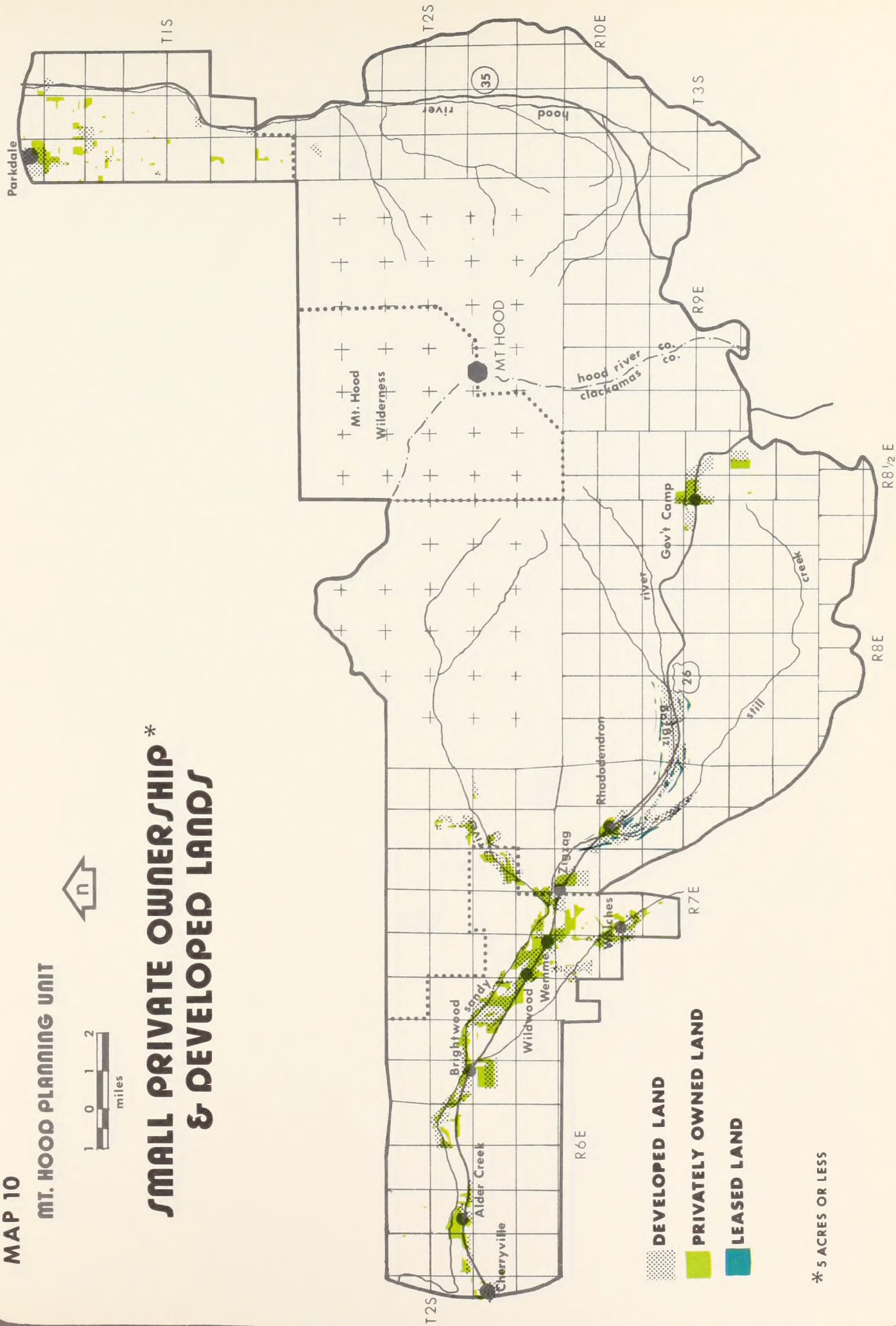


MAP 10

MT. HOOD PLANNING UNIT



SMALL PRIVATE OWNERSHIP & DEVELOPED LANDS*

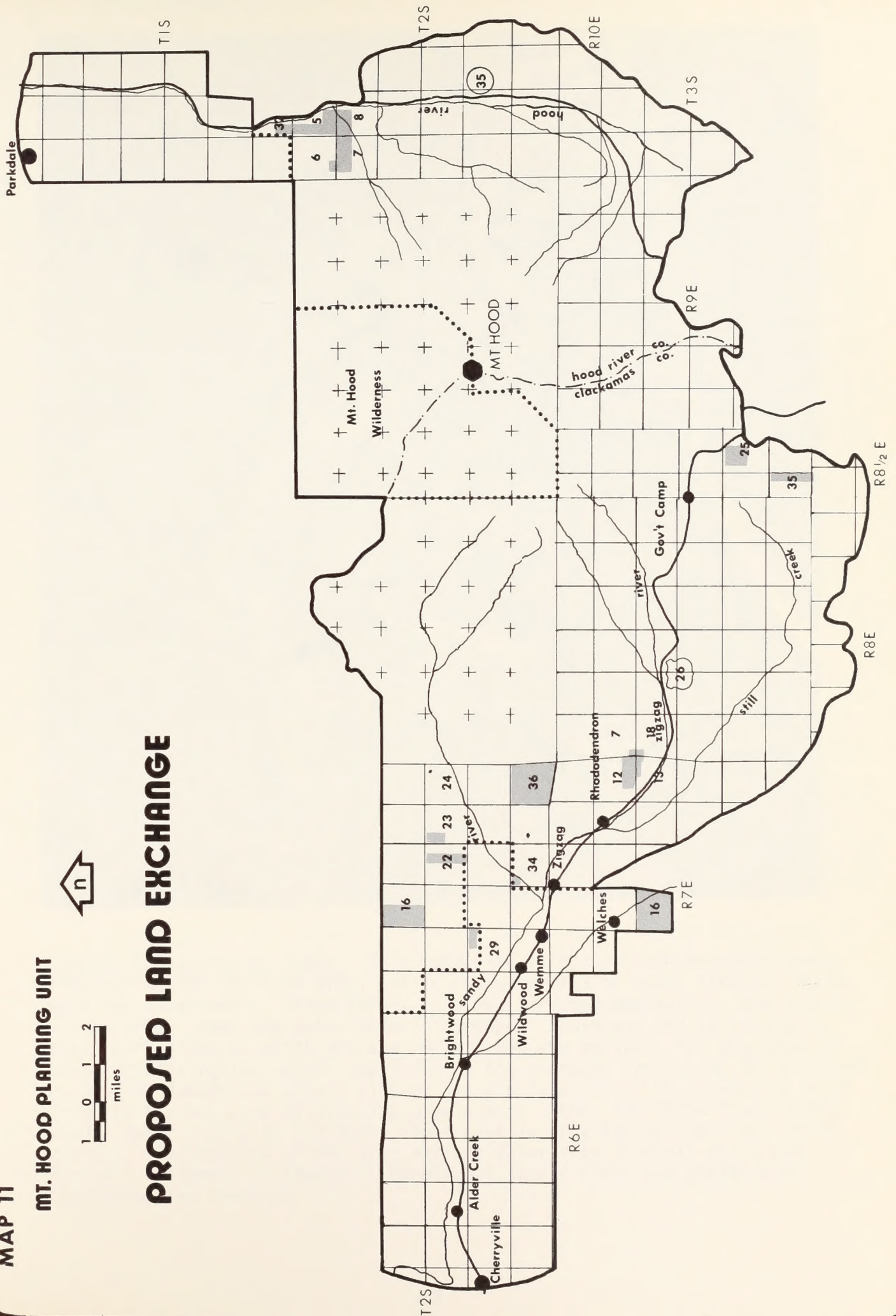


- DEVELOPED LAND
- PRIVATELY OWNED LAND
- LEASED LAND

* 5 ACRES OR LESS



PROPOSED LAND EXCHANGE





Cherryville and Alder Creek. This community introduces the eastward-bound traveler to the mountain area, and is characterized by rural farm and small wood lot development, dense stands of mixed forested vegetation, and scenic vistas of Mt. Hood and other major ridgetops. There are 520 residents, a small percentage of which are seasonal. Land use policies for the area include protecting the scenic qualities of the highway, projecting for a future commercial center and school site within the interior of the community away from the highway, and restricting development within the Alder Creek watershed. Water supply to the Alder Creek area is provided by a private water company. The balance of the area derives water from domestic wells and springs. Disposal of sewage is handled by septic tanks and drainfields throughout the community.



Sleepy Hollow and Brightwood. An area which is rural residential in character and shows signs of strip highway development. The community from Sleepy Hollow to Brightwood has 1000 to 1100 residents (seasonal and year round) and land available for future expansion where floodplain and steep hillsides can be avoided. Already indicated is the need for a compact service and business center south of the Sandy River bridge, a local park and future elementary school, more price-diversified housing, and improved intersections at each end of Old Highway 26. A solid waste site to serve the entire recreational corridor is also recommended for this area. Six different private water systems presently serve parts of the community. With the exception of Timberline Rim's privately-owned treatment facility, all sewage disposal in the area is subsurface. A new fire station to house one engine was recently constructed near Cook's Motel.



Wildwood, Wemme and Welches. This community area is generally oriented toward either the Highway or the golf course in the Welches area. Mixed housing and commercial facilities extend along the highway, hampering traffic carrying capacity and presenting a discordant appearance. The designated centers at Wemme and the Welches junction have room for additional commercial development. The population is approximately 1,600, of which forty to fifty percent is seasonal. The area around the golf course is projected for resort development of a medium density character. A recreational-residential trail system along the Salmon River and shuttle bus service to winter ski areas have also been suggested. Development of housing and business facilities in clusters that are buffered and oriented away from the highway will be encouraged. Water service to the area is provided by more than ten (10) different systems. Sewage disposal is generally subsurface, with the exception of two private treatment systems serving Bowman's Resort and adjacent homes.



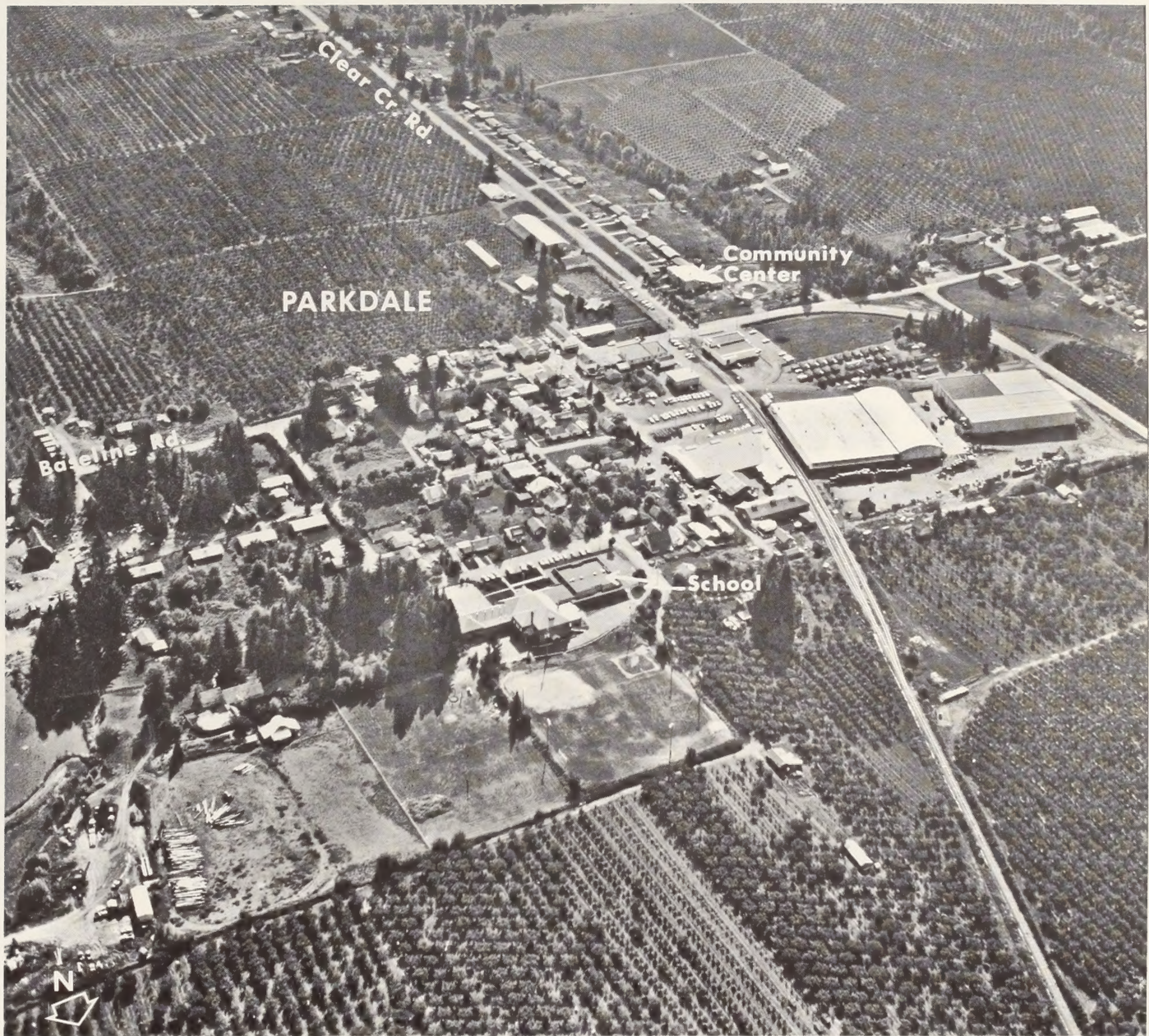
Zigzag, Lolo Pass and Faubion. The junction of Lolo Pass Road and Highway 26 is the entry point to the National Forest and serves as a fairly compact community core. The Zigzag District Ranger Station, several commercial facilities, Hoodland Park Recreation Hall, fire station, and Welches Elementary School are all located here. Population is 750 permanent and seasonal residents. Policies for land use include improving the intersection to reduce congestion, developing an integrated business center south of Highway 26, and protecting the scenic qualities of the Lolo Pass and Salmon River roadways. Plantings to upgrade appearances and reduce highway impacts upon the adjacent community have been encouraged. Water is presently furnished to residents by more than 10 different systems. All sewerage disposal is by subsurface means, excepting the Zigzag Village treatment plant.



Rhododendron. This 200 acre residential--recreational community is an enclave within the National Forest and straddles Highway 26. Business facilities front both sides of the highway. Population is 320 residents, a high percentage of which are seasonal. A safe means of crossing Highway 26 and low density development characterized by individual residences surrounded by native vegetation are high priorities within the community. A development pattern to better clarify community land use policy is also needed. Water service to Rhododendron originates on Henry Creek and is controlled by the Rhododendron Summer Homes Association. Lady Creek provides water for the summer homes in the Zigzag area above Rhododendron on lands leased from the Forest Service. All sewage disposal is handled by individual septic systems.



Government Camp. Uniquely separated from the lower elevation communities, Government Camp is surrounded by the alpine setting of National Forest and derives most of its income from the winter recreation industry. Key winter sports areas include: Multorpor, Ski Bowl, and Summit. Weekend parking and circulation problems are acute during the snow season. Future planning specifies resort-type development in areas adjacent to ski facilities and the main business areas, which front Old Highway 26. There is need for a community parking facility, a system of snow removal and storage, and a program for local fire protection. A loop road south of the highway is proposed to alleviate congestion problems associated with the overpass accessing Multorpor. Available services include a private water system and public sanitary treatment facility. Weekend sewerage demands exceed present capacity (110,000 gpd) and greatly complicate performance. Construction of an improved, expanded treatment plant is expected by summer 1976. The present zoning is generally Recreational Residential (R-R), which provides for up to four (4) units per acre of suitable land. There are some 210 housing units within the private community, including 47 condominiums. Population is about 550 residents, almost three-quarters of which are seasonal.



Parkdale. Surrounded by orchards, the community of Parkdale is located approximately one and a half miles west of Highway 35. Commercial facilities, elementary school, community hall, and a large industrial plant managed by Diamond Fruit are concentrated here. Future community expansion would occur within the present sanitary district to minimize conflicts with adjacent agricultural uses. Population is approximately 300, which swells two-fold with influx of seasonal migrant labor in summer months. Central water and sewer services are available, while fire protection is provided by the Parkdale Fire District.



Cherryville area



Alder Creek area

COMMUNITIES



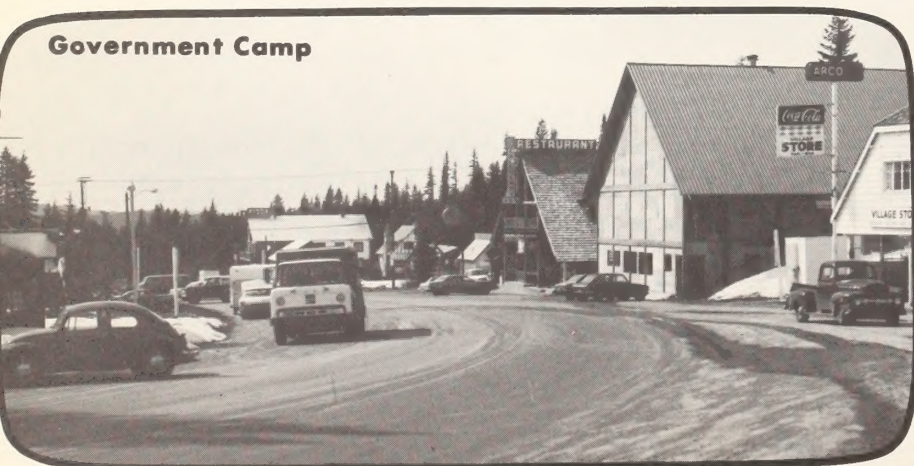
Wemme



Zigzag



Rhododendron



Government Camp



near Parkdale

SEWERAGE

Public sanitary facilities are located at Government Camp and Parkdale with four smaller private systems in Brightwood, Welches and Lolo Pass. The engineering firm of Stevens, Thompson and Runyan, Inc. is presently conducting sewer feasibility studies in the west corridor area from Rhododendron to Alder Creek and involving the four private systems previously mentioned. More specifically, they are located in the Timberline Rim development at Bowman's Golf Club and Mt. Hood Golf Club Terrace and at Zigzag Village. All four are of an activated sludge type and relatively small.

Each of these facilities employ holding lagoons, spray irrigation or a combination of both to avoid effluent discharge into the receiving streams during the low flow summer months. The Timberline Rim and Zigzag Village facilities are operating at flows far below their design capacity, while the Mt. Hood Golf Club Terrace facility is operating at about half its design capacity. Records have indicated however, that the Bowman's facility is grossly overloaded hydraulically with flows reaching almost double the design capacity.

Recent tests by the Department of Environmental Quality have shown that the Mt. Hood Golf Club Terrace facility seems to be meeting the effluent discharge criteria set by its operating permit, while the Bowman's facility is not; probably caused to a large degree by its overloaded condition. The Timberline Rim and Zigzag Village facilities have not been monitored because of their very low flows.

The following table summarizes the design criteria and other pertinent data related with these facilities.

Figure 10
EXISTING SEWAGE TREATMENT PLANTS

Plant	Population PE		Flow MGD		Receiving Stream	Level	Remarks
	Design	1975	Design	1975			
Timberline Rim	1827	25*	0.150	4/ -	Sandy River	20/20 2/	There has been no discharge
Mt. Hood Golf Course	300	250*	0.30	0.54	Salmon River	30/30 3/	Flow meter may not be calibrated
Mt. Hood Golf Club Terrace	150	75*	0.15	0.007	Salmon River	20/20 3/	Serves approximately 22 homes
Zigzag Village	250	18*	0.025	-	Sandy River	20/20 2/	There has been no discharge
Government Camp	350	350	0.063	0.160	Camp Cr.	10/10	New plant proposed 5/
Timberline Lodge	1000	300	0.060	0.020	Salmon Riv	-	No discharge
Mt. Hood Meadows	375	300	0.040	0.020	E.F.Hood Riv	20/20	
Parkdale	1000	300	0.100	0.030	Trout Cr.	20/20	No discharge

* Estimate and includes part time residents

1/ Indicates the permit requirement for effluent BOD and suspended solids.

2/ Discharge to holding pond June 1 to November 1 with no discharge to stream

3/ Irrigation of golf course June 1 to November 1 with no discharge to stream

4/ One 75,000 gpd activated sludge unit presently in operation

5/ Proposed capacity is 225,000 GPD

WATER

The population living in the Mt. Hood Planning Unit, whether seasonal or permanent residents and served by sanitary sewers or septic tanks must be assured of safe and adequate supplies of domestic water. Today water is being provided from a number of sources, including wells, springs and rivers. Many of these sources and delivery systems are satisfactory while others have problems. In the westside corridor there are some 40 registered private community water systems which provide service to over 1000 homes. As the demand for water increases the residents will find themselves facing a number of alternatives: (1) expand existing systems; (2) develop new community systems; (3) consolidate existing systems into one or more larger private community or public system. The eastside corridor (Hood River portion) presently has adequate water service from the Crystal Springs and Parkdale Water Districts. Irrigation water is supplied to the farming areas by the Middle Fork Irrigation District.

The future level of development in the Mt. Hood area will largely determine how the eventual need for water will be met and what it will cost. For example, a recent study prepared by the engineering firm of Dorner and Tunks, Inc.,* for the non-operational Mt. Hood Loop Water District, dealt with future water needs of the westside corridor concluded that no less than four million dollars would be required to develop a public water supply system which would be capable of serving the area at its present rate of growth.

SCHOOLS AND OTHER ESSENTIAL SERVICES

School children living in the Mt. Hood area have the same need for a quality education as children in other parts of the state. At the present time, there are about 570 elementary age children living in the area. Existing school sites include Parkdale Elementary which has limited room for expansion and Welches Elementary, with additional expansion potential.

In addition to the more visible services of sewers, water and schools, the provision of other types of services must be considered, such as the local road network and its continual upgrading and maintenance. The need for police and fire protection must also be met as the number of people and the amount of improved property increases within the area. Snow removal and storage is a major problem peculiar to Government Camp and the higher elevation snow zone areas (above Zigzag), and solid waste disposal is an important need throughout the entire planning unit. Central transfer stations where waste can be conveniently deposited and transferred to county land fill sites should be established for the present population, notwithstanding future needs.

As the community continues to grow both the level of services and the number of different kinds of services will also have to grow. In addition to the more visible services discussed above, the provision of other types of services must also be considered. As more and more people settle in the area the demand placed on streets and roads will also increase. This means the upgrading of existing roadways to accommodate the increased use. Overall maintenance of these roadways will have to be increased to insure that the mobility of both residents and visitors is maintained the year around.

* Preliminary Engineering Report and Feasibility Study - July 1974, Mt. Hood Loop Water District, Clackamas County, Oregon - Dorner & Tunks, Inc. Engineers, Portland OR

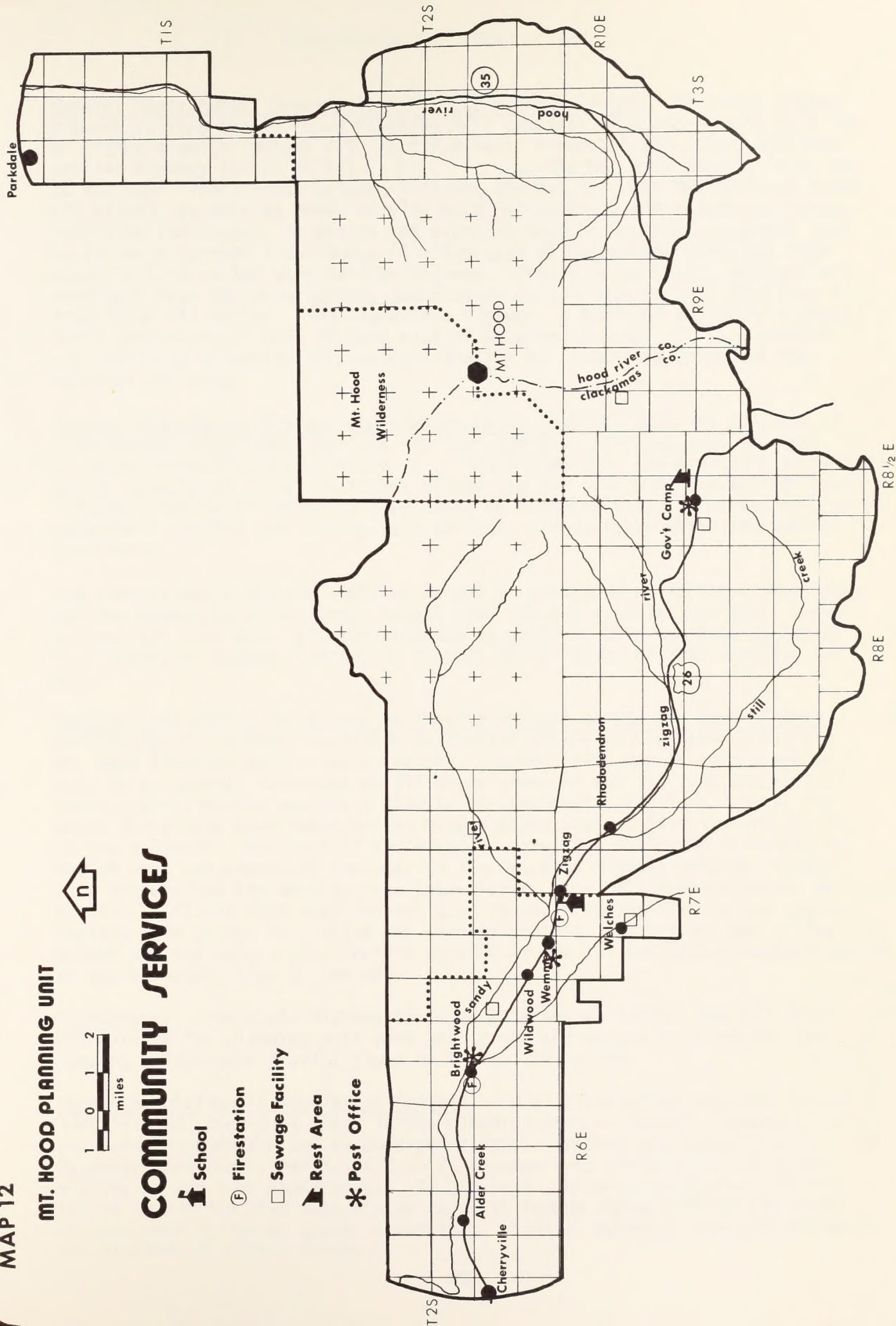
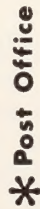
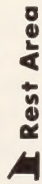
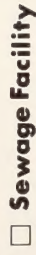
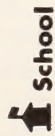
The need for police and fire protection will also increase as the number of people and the amount of property in the area grows. Solid waste disposal is always a problem in populated areas. As long as population levels remain relatively low solid waste can be consumed in one or two small solid waste facilities. As the population of the community increases, a more suitable disposal method of solid waste will have to be sought, such as a central transfer station where waste could be deposited and transferred to the county's central landfill site. Here too, the level of development throughout the area will determine the kind of solid waste facilities needed.

MAP 12

MT. HOOD PLANNING UNIT



COMMUNITY SERVICES



TRANSPORTATION, STATE SYSTEM

General Geographical Description of State Highway System. The State Highway network serving the Mt. Hood Planning Unit consists of approximately 60 miles of highways which include U.S. 26 (27 miles), Oregon 35 (27 miles) and Timberline Highway (5-1/2 miles). () The Mt. Hood Highway (U.S. 26) is the most direct route between Portland and the Mt. Hood Recreational Areas (55 miles), as well as Bend, serving both recreational and commercial transportation functions. It enters the planning unit on the west, proceeds east to the Warm Springs Interchange (4 miles east of Government Camp) and then south to Bend as the Warm Springs Highway. Oregon 35 continues eastward and northward from the Warm Springs Interchange to complete the Mt. Hood Loop to Hood River (41 miles). The Timberline Highway, a two-lane secondary highway, forks northward off U.S. 26 just east of Government Camp. It is a deadend spur carrying primarily recreational traffic to Timberline Lodge and the adjacent ski area.

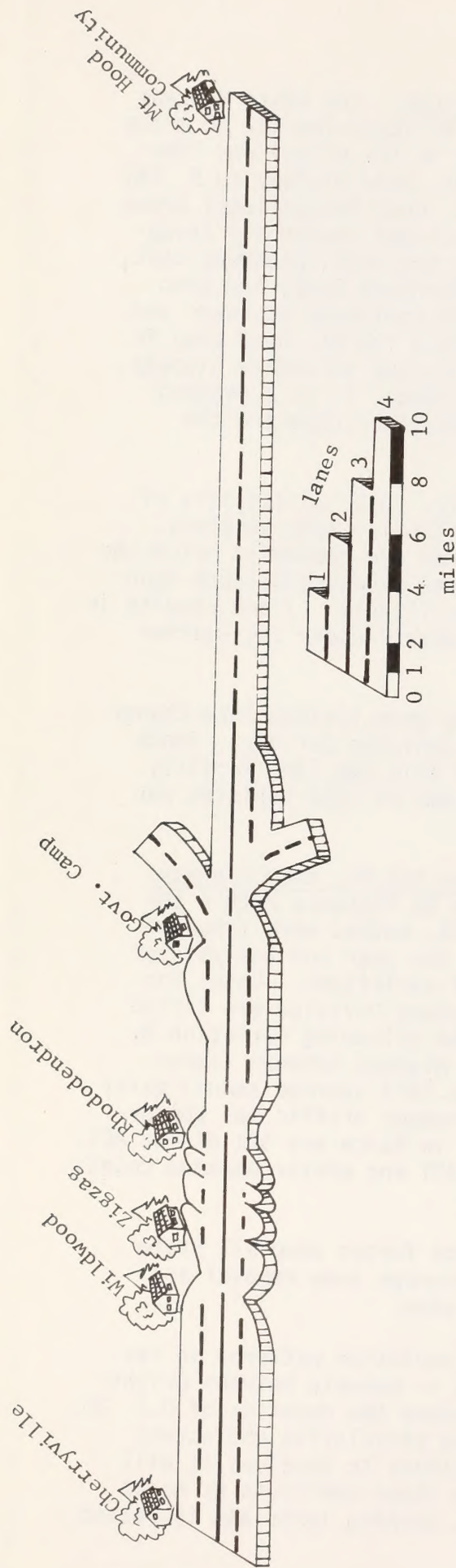
Present Capacities, Designs and Average Daily Traffic. U.S. 26 consists of interspersed four-lane, two-lane and two-lane plus climbing lane sections, as shown schematically in Figure . Traffic volumes are presently below the design capacities in all sections, though the two lane Wildwood-Welches Road (Zigzag) section is operating very close to capacity (Figure) and results in occasional traffic jams during peak periods, particularly under bad weather conditions.

The average daily traffic (ADT) on Oregon 35 between Warm Springs Interchange and the community of Mt. Hood, ranges from 320-430 vehicles per day. These volumes are less than 1/10 the existing capacity of this two lane facility. The Timberline Highway carries an average daily volume of 1050 vehicles per day.

Seasonal and Weekly Variations in Traffic Volumes on the Mt. Hood Highway. Information on seasonal variation in traffic volume on highways within the Mt. Hood Planning Unit is very limited. During 1972, counts were taken on U.S. 26 at several locations at different times of the year and analysis of these traffic counts provide a clue to the seasonal variations. Dates for which these data were taken by the Oregon State Highway Division are listed in the appendix. Analysis of these counts shows the following variation by day of week and season of the year on the Mt. Hood Highway between Timberline Highway and the Warm Springs Interchange. The 1972 average annual daily traffic (ADT) was 2700 vehicles per day. Weekday summer traffic was approximately 110% of the ADT, while the weekday traffic in March was 56% of the ADT. Summer weekend counts show traffic at 180% of the ADT and winter weekend counts at approximately 140% of the ADT.

Maintenance. The State Highway Division maintenance forces keep all State Highways in the planning unit open year round and manage snow removal and sanding to maintain traffic flows on the entire system.

Local Circulation in Population Centers. Local circulation patterns in residential and commercial areas in the planning unit -- notably between Brightwood and Rhododendron and at Government Camp -- reduce the capacity of U.S. 26. Moreover, the heavy traffic on U.S. 26 impedes free circulation and access within, to and from these areas. As the area continues to develop, it will become imperative that measures be taken to reduce these conflicts by means of some combination of grade separations, signals, turning lanes and increased restrictions on direct access.



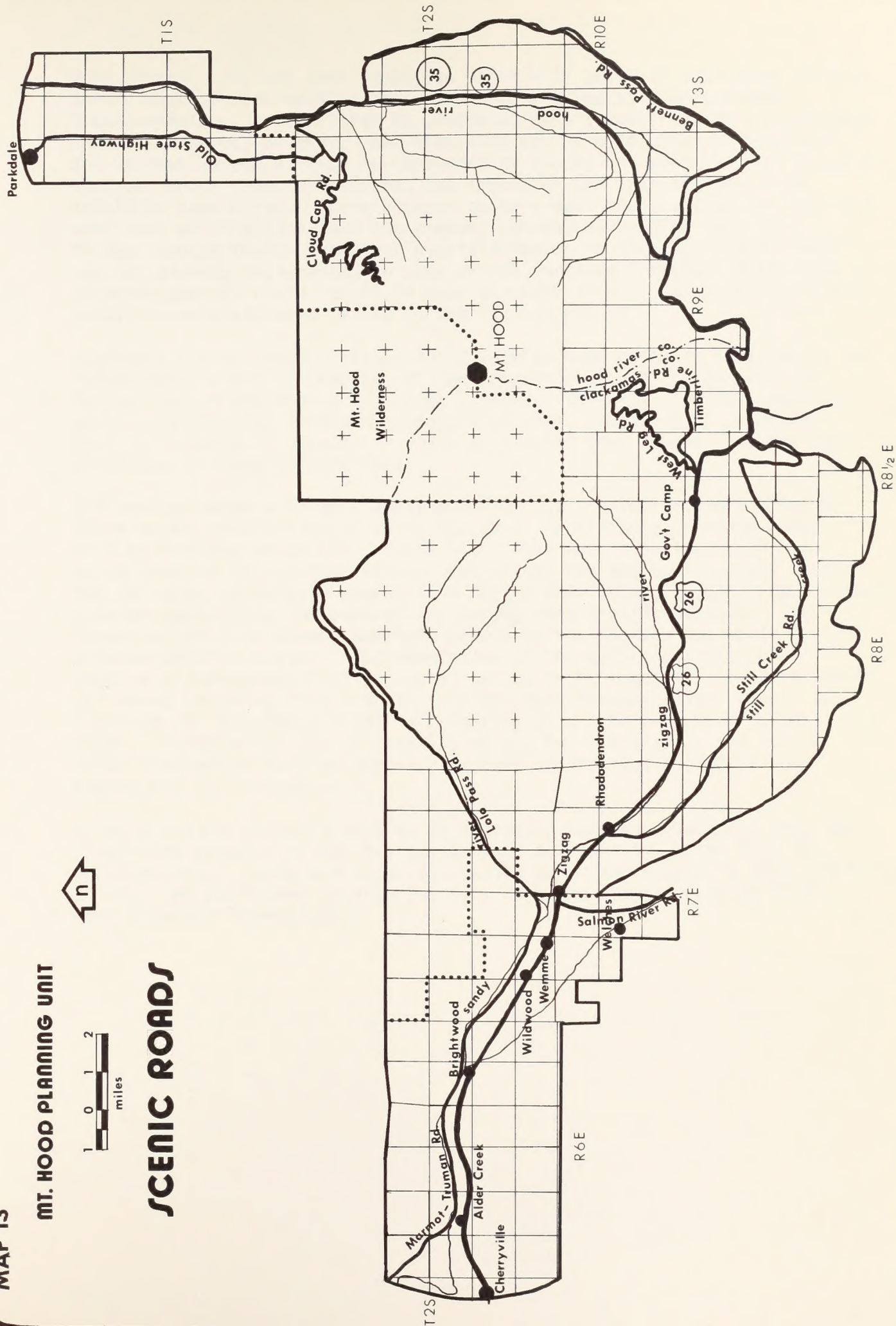
SECTION	EXISTING CAPACITY	1972 ADT
Cherryville-Wildwood	26,200 (4 lanes)	5,600
Wildwood-Welches Road	6,500 (2-lanes)	5,400
Rhododendron-Timberline Highway	6,300 (2-3-lanes)	3,100

Figure —: Existing capacities, number of lanes and 1972 average daily traffic (ADT) for US 26 from Cherryville to Timberline Highway. "3 lanes" indicates two travel lanes with one passing lane or with turning lanes.

MT. HOOD PLANNING UNIT



SCENIC ROADS



Mass Transit Any ski area expansion which will generate additional skiers during peak periods must address itself to provide appropriate mass transportation. Alternatives to providing mass transportation are probably interim measures, however, they should be explored in order to provide the maximum amount of time to implement an economical workable mass transit system. Under interim measures, the impact of the four-day work week should be considered. There appears to be a definite trend to the four-day work week which will extend the present two-day weekend to four days, Friday through Monday. Another possible impact is the year-round school concept already implemented in some of the Portland schools. Wintertime vacation periods could result in more mid-week skiers. Area ski operators should promote mid-week skiing to the fullest extent.

Appropriate mass transportation would seem to mean buses or shuttles in the foreseeable future. Location of the terminals should, in general, be located out of the snow area (below Zigzag). The best terminal locations would be within the Portland metropolitan area. Location of terminals east of Zigzag will require at least occasional snow removal and the construction of large parking lots.

The average skier will be discouraged from bus transportation as long as there is any possibility of using his car. Accordingly, certain steps will be required which will reduce use of the car. Consideration ought to be given to an advanced reservation system for the parking lots within the ski area, along with appropriate notice when lots are full, coupled with metered egress from the parking lot during peak traffic periods. The latter would allow buses immediate access to the highway but would control private vehicle access. Implementation of the metering system would require an automated traffic control system tying together all of the major ski areas including that traffic from Mt. Hood Meadows which returns to Portland via Government Camp. Technically this type of system is available today. Financially and politically it may be some time in the future. Other inducements such as parking lot fees and/or subsidizing of buses should also be considered.

A "park and bus" shuttle program is operating between Government Camp and Timberline Lodge. Tri-Met Bus System also operates two buses from the Portland area. Seats are on a reservation basis and pickup is from specified points. An additional shuttle bus runs from the Welches area to Government Camp and Timberline.

The following is a summary of an economic overview of the Planning Unit prepared by the Mid-Columbia Economic Development District (MCEDD). Copies of the complete report are available for review at the Planning Departments of Clackamas and Hood River Counties, Mt. Hood National Forest Supervisor's Office and MCEDD.

The Mt. Hood Planning Unit is far too small (in terms of population) and undeveloped to be considered a complete economic region. It is part of a larger region and therefore, dependent on external forces. The Planning Unit's population is .01% of the Portland economic region which is over one million people. Most of the demand for Mt. Hood area services and corresponding revenue is derived from the City of Portland which serves as the regional population, commercial, industrial and financial center. The Planning Unit is a unique appendage of the larger economic region because its boundaries identify both a natural resource area being jointly managed by public agencies and an area where common economic interest and activity is based on those natural resources. The area is suitable for analysis because it is geographically and demographically separated from surrounding population areas, economic activity is limited and dependent on the natural resource base and business activity is influenced by management decisions of the government agencies controlling those resources.

Economic activity is divided into three general categories: agriculture, wood products and tourism-recreation. Each is substantial in terms of revenue and employment with tourism-recreation activity being the most significant. Employment and revenue trends indicate all sectors are dependent on seasonal and cyclical factors.

Fig. 12 - RELATIVE INFLUENCE OF ECONOMIC SECTORS

Category	Employment		Revenue	
	Wages	% all Wages	Revenue	% all Revenue
Commercial-Recreation	\$5,710,000	67	\$12,690,000	67
Agriculture (orchards)	1,302,000	14	2,713,000	15
Wood Products	1,594,000	19	3,367,000	18
All Activity	8,606,000	100%	18,770,000	100%

Source: Mid Columbia Economic Development District

COMMERCIAL FACILITIES

Most commercial establishments serve two customer groups -- residents and nonresident travelers. Virtually all businesses are located in the developed

^{1/} More information the economic situation is available for review at the Planning Departments of Clackamas and Hood River Counties, Mt. Hood National Forest Supervisor's Office and MCEED.

areas within three miles of either side of Highways 26 and 35. There are 110 places of employment, of which 104 are commercial establishments. In total, the commercial places employ over 1000 people. Ninety-two of these businesses are located in Government Camp or along Highway 26 in Clackamas County. Most businesses are small marginal operations, often providing several services. Weather and low permanent demand limits operations to economics of small scale.

Over 90% of the commercial establishments have gross revenues under \$50,000 and employ fewer than six people. Insufficient local demand limits further development and expansion of most small businesses, particularly in the service and professional areas. An estimated 20% of total demand for commercial products and services is generated by the resident population. Competitively superior markets in Portland capture most local demand for durable goods and staples.

Businesses designed mainly for tourism-recreation services are generally much larger. The three major resort establishments in the Planning Unit account for about 40% of total commercial activity. Weather conditions are by far the biggest factor determining seasonal and yearly demand and therefore, revenue and employment. Sunshine and snow conditions determine yearly trends in alpine skiing demand, not cost or competing recreation activities. Pronounced seasonal and weekly fluctuation is typical of demand for winter sports because of seasonal availability, vacation and holiday schedules and recreation traditions. In late spring, snow levels are not a factor in determining demand.

Demand for summer recreation facilities on the west approach (primarily Bowman's Resort) is similarly subject to seasonal fluctuations with highest use in the summer. Seasonal activity switches from the mountain and its south and east slopes in the winter to the west slope and approach in the summer. Timberline Lodge maintains a reasonably constant level of activity by serving both summer and winter demand. Innovative marketing efforts by the major resorts to offer a diversity of activities and services has had a tendency to reduce dependence on weather conditions and seasonal variations in demand. Nonrecreational uses such as conventions and business meetings are of increasing significance.

Demand for recreation facilities, both summer and winter, has uniformly increased in recent years. Increases in the use and revenue have been higher for summer recreation than winter activities. The major resorts indicate increases from 5-12% per year. High occupancy rates and capacity use of facilities during peaks indicate demand may exceed supply or be approaching an excess situation. Many factors such as marketing ingenuity, price, weather and suitability of existing facilities affect their rate of use.

Clackamas County considers existing zones for commercial use adequate to accommodate additional commercial development. Except for privately owned land, recreation facilities supply on Mt. Hood are subject to control by the Forest Service in the construction, use and expansion of facilities by private business.

Ski and resort facilities generate much of the commercial activity. Most of the revenue accruing to the smaller businesses is the result of recreation demand on Mt. Hood. Exceptions are Bowman's Resort and recreational subdivision activity.

Recreation and resort business is quite labor intensive. About 45% of total revenue in this industry is spent on wages. Average wages tend to be low and based on hourly rates. Hourly wages range from \$2 to \$5 per hour and annualized salaries up to \$20,000. The Mt. Hood National Forest provides a range of salaries to its 105 permanent employees.

Most workers are young and are of diversified nontechnical skills. Many workers change occupations each year having both a summer job and a winter job. Frequently, firms use the same person in one capacity in the winter (i.e. lift operator) and another in the summer (carpenter). Wages are too low to allow workers to live on seasonal income. Frequently, several members in a family household work.

From the employer's point of view, labor turnover is the biggest problem. Unemployment compensation charges and training costs both increase as turnover increases. Factors not related to labor productivity often determine hiring. Those with housing are often given preference by employers over those who don't. Bowman's Resort for example, draws heavily on members in summer recreation households to fill its high labor demand in summer.

Because of the versatility of the labor force, it is hard to specify skill levels. Using rough estimates, we determine that resorts require about 35% unskilled, 40% skilled and 25% administrative or professional (estimates provided by Mid-Columbia Economic Development District).

Short term dwelling patterns of seasonal workers limit potential rents to landlords. Consequently, less is invested in rental housing creating seasonal housing shortages and lower quality housing. The same problem applies to other facilities used by the temporary labor force. Parkdale currently has a critical housing shortage and cannot meet winter demand by employees working at ski areas.

Creation of additional employment in commercial businesses generates additional sales and multiplies the economic impact of payments to the new employees. This effect is relatively low in commercial activity.

In summary, tourism and recreation are large and variable aspects of the local economy. Weather for the most part, determines seasonal activity for winter recreation. Summer recreation is experiencing moderate and steady growth and tends to be more stable from year to year. Recent changes in minimum wage laws and overtime compensation will dramatically affect labor force size and consequently, many aspects of the area including services, housing, etc.

WOOD PRODUCTS

The harvesting of timber in the Planning Unit contributes to the economic situation in the Planning Unit.

The timber market generally has been subject to substantial fluctuation over the past two years. Decreased demand in the building industry for housing construction has adversely affected employment in the wood products industries. Higher production costs have tended to increase timber and wood products prices.

About 81% of the acres committed to timber harvesting are under public ownership. Under systems of open bidding by private enterprise, timber prices tend to vary according to market conditions. On both public and private lands, the rate of timber removal is affected by market conditions.

Currently, there are approximately 116,600 acres of productive timber lands in the Planning Unit. Of this, about 60,500 acres are committed to harvesting. The present annual harvest is about 23,500 MBF. The supply of timber available for harvest is regulated on Forest Service, BLM, State and County lands. Management policies of these agencies thus affect activity in the wood products industry, through constraints based on nonmarket considerations.

Harvest is generally assured in the Planning Unit while the value of economic activity in the wood products industry tends to vary.

Current timber harvest generates about 165 employees in logging and processing operations. Not all employment is located in the Planning Unit. Processing facilities are located outside the Planning Unit in the Hood River Valley and in Clackamas County.

Employment in logging operations within the Planning Unit is seasonal. The length of the season varies according to weather conditions, elevation and access but generally runs six to nine months. Year round logging is possible in portions of Clackamas County. Workers are generally considered semiskilled and skilled with relatively high wages during season. No doubt, workers seek employment in winter recreation operations but the labor flow between the two is not known. Most find unemployment compensation provides the highest income during the winter months. Workers tend to be permanent residents with stable housing needs.

Average wages are relatively high, \$9350 per man year and about 47% of revenue in the industry is spent on wages. Associated with employment, spending patterns of employers and employees is seasonal.

AGRICULTURE

Of the three primary sectors, agriculture is the only economic activity almost entirely in a single location. The upper Hood River Valley is part of a homogeneous agricultural region, including 2200 acres of apple and pear orchards with 600 additional acres in pasture land. Average farm size is small -- less than 50 acres. Since this activity is geographically specific, indicators are easier to isolate than in commercial and wood products sectors.

Apple and pear crops are processed in Parkdale and Odell (outside the Planning Unit) and marketed regionally and nationally. Prices are set according to regional and national supply and demand factors. On a national basis, demand is rather stable and increasing moderately over time, although prices fluctuate.

Revenue from orchard crops account for virtually all farm income within the Planning Unit. Gross revenue is the product of externally determined prices and annual yield rates. Revenue from production of apples, winter pears,

Bartlett pears and livestock in 1974 was estimated to be \$2,713,000. Weather conditions create fluctuations in annual production and revenue. Past price has little effect on production decisions -- a typical situation for high initial investment -- lagged return crops. In some cases, when yield or price is sufficiently low, orchardists will not harvest crops when costs cannot be recovered. Investment follows a cyclical pattern where it exceeds depreciation in years following high revenues and is less than depreciation in years following poor harvests.

There are basically four types of demand for farm labor; permanent, culturing, seasonal harvesting and seasonal processing. Diamond Fruit has a plant in Parkdale that employs approximately 180 people in processing and cold storage operations from mid-September to December. The demand is reduced to ten employees in the spring and four in the summer.

Harvest labor demand varies each season according to yield rates and weather conditions during harvest. A median year would require a temporary labor force with an August-September peak. Pruning and thinning requires a smaller work force which starts in May and June with a permanent labor force estimated to be 25. There are cross linkages in these labor groups. Workers can shift from pruning crews to harvesting to working in the processing and cold storage plants. There are also cross linkages between these labor groups and winter employment in recreation activities on Mt. Hood.

About \$1,302,000 was paid in 1974 to an estimated 950 workers in all agricultural activity. Orchard crops are somewhat labor intensive. Wages paid on a piecemeal basis (except permanent workers) convert to a moderate hourly wage rate of \$2.11 to \$2.50. Spending patterns of seasonal workers do not stimulate much additional spending. Local spending takes place from June to December, peaking in September.

Agriculture is cyclical from the economic standpoint. Most seasonal stresses on public facilities, housing, etc. are provided for. Hood River County generally has adequate migrant housing. One external factor (State enforcement of the migrant housing code) is increasing production costs without increasing return. Subsequent grower adjustments in production have not been made but over the long run, the net effect will be increased costs and increased farm size and possibly consolidation of migrant housing.

SUMMARY

Each of the three economic sectors in the Mt. Hood Planning Unit tend to be separate in terms of their sources of revenue. All are related in other respects. Labor is especially subject to lateral flows from one sector to another. Numerous short work seasons and a substantial supply of low skill, moderate wage jobs provide the framework. The population is generally highly mobile and can fill area labor demands quickly but not easily.

Constant demographic transition creates demands for products and services that are hard to pin down. Add the influence of weather conditions and it is easy to see why the economy is constantly fluctuating and hard to assess.

Stabilizing the population and labor force to a greater degree would have many benefits. Stresses on supporting public facilities and social services would be reduced. Housing quality could be improved. Labor costs and turnover rates in private sector business could be reduced. Public planning and decisions would be made easier. A positive attitude of managed growth, or at least a clearer picture of what will be allowed, should help to bring about a more stable business and community investment climate.

The land management policies of the Forest Service, BLM, State and County play a role in the supply of commercial recreation activities, which affect recreation use. In the Planning Unit, supply is a controlling factor of the level of economic activity. In commercial-recreational activity, marginal supply changes can be made. Demand is sufficiently large and well diversified to make marginal supply and marginal pricing viable. A conflict exists between private operators and public agencies. Business operators in the recreation sector recognize the stability and profitability of marginal increases through diversification of activities but do not necessarily appreciate the costs of environmental protection. Public agency policy, on the other hand, has followed a philosophy (not directly recognized) that includes an economic cost to permitted operations to manage and protect the environment.

Environmental Capacity

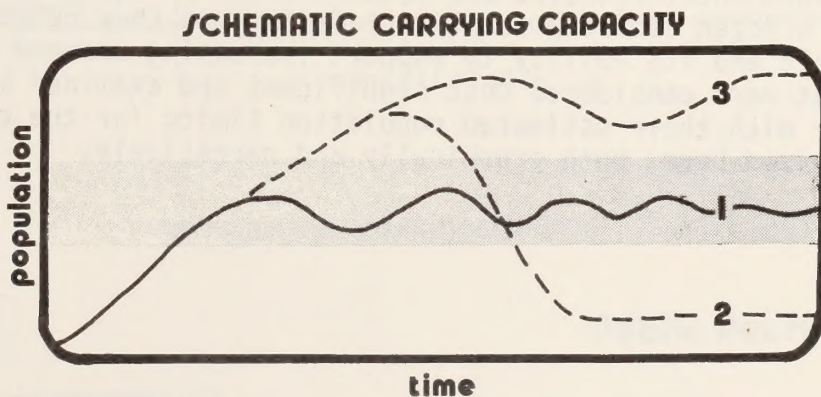
ENVIRONMENTAL CAPACITY

"It is obvious that to crowd excessive numbers of people and houses into the (Mt. Hood) area would create problems of over-using the available resources the question is how much development and how many people, cars, new commercial and recreational facilities can be added to the Mt. Hood area, still maintaining the quality and standards of environment which are presently here?"

Preliminary Plan - Mt. Hood Community
Clackamas County (August 1973)

In view of the fact substantial numbers of the area users are complaining about crowding and creeping deterioration of the Mt. Hood environment, the need for a managed growth strategy was recognized by the Clackamas County Community Plan for the Highway 26 Corridor. It was provided that an "environmental carrying capacity" be determined and implemented throughout the area, encompassing public as well as private lands. The Mt. Hood Interagency Planning Team, under the direction of its Executive Board, has integrated the concept and principles of carrying capacity as the heart of the overall planning process.

The term "environmental capacity" can be most clearly understood as the ability of an area to accommodate human development while sustaining its character and environmental values. In the Mt. Hood area, the natural characteristics are of paramount importance and form the basis for its long term management. The task of the managing agencies is to respect this priority in determining the type of use appropriate to the area, the proper intensity of use, the degree of impact which can be considered acceptable and the distribution of residents and visitors alike. These factors are important in assessing the maintenance costs required to improve conditions or to increase capacity without risk of natural or aesthetic values. They are also the basis for testing the performance of significant development projects and for guiding economic growth and public works investment.



● Carrying Capacity

- (1) Growth limited near carrying capacity by governmental policies or environmental constraints.
- (2) Growth is allowed to exceed carrying capacity, causing resource degradation and eventual population decline.
- (3) Carrying capacity is increased and population allowed to expand without environmental degradation due to improved land use practices or technological gain.

The central questions of environmental capacity are "what", "where", and "how much". Once it is established which lands are to be used for what purpose, one question remains -- how intensively will it be used? The following chart illustrates the planning team's approach in going about these determinations.

(1) DATA COLLECTION AND SYNTHESIS

- resource and land use inventory
- review existing plans, programs and policies
- frame initial objectives and direction
- determine land suitabilities

(2) ANALYSIS AND PRELIMINARY ASSESSMENT

- establish public goals and priorities
- identify alternative futures
- measure constraint factors and limits
- develop alternative plans and impacts

(3) DECISION ON PLAN AND ENVIRONMENTAL CAPACITY

- publish draft environmental statement
- public hearings and agency review
- re-evaluate and recommend design population
- member agencies decide on interagency plan
- develop common ordinances and growth policies
- implement and monitor

Because the concept is somewhat variable, it should be recognized that carrying capacity is not a single fixed number. Emphasis should be given to identifying important resource limits and environmental factors as they interact to restrain growth and its associated spinoffs.

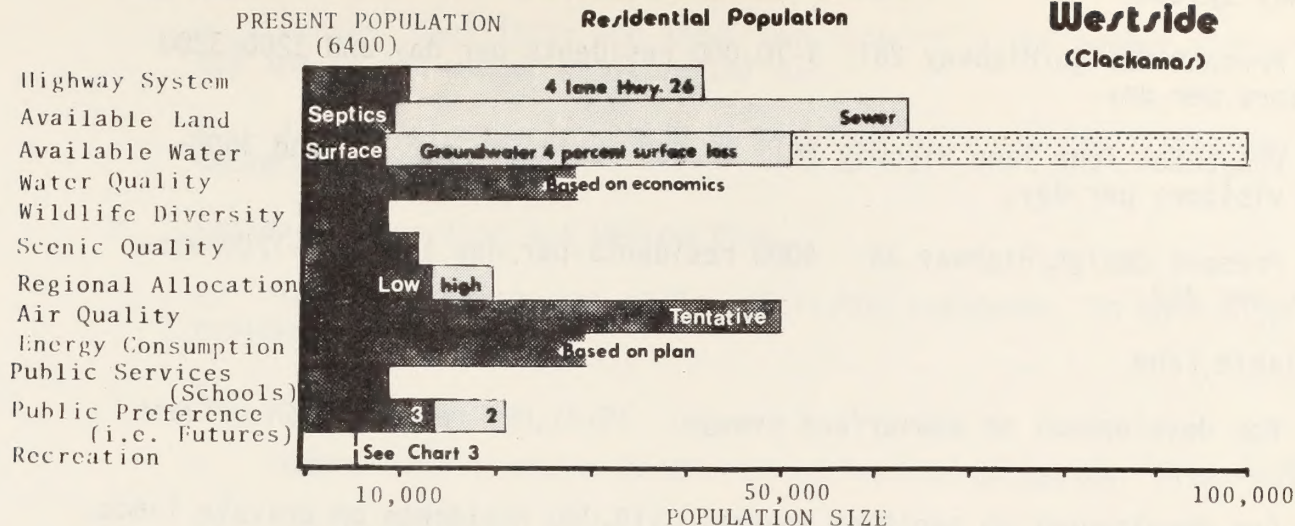
In March 1975, the planning team formed a committee comprised of specialists from various governmental agencies and undertook the assignment of estimating the capacity of a dozen isolated constraint factors as they relate to the Mt. Hood Planning Unit and its ability to support increasing use and population. The elements that were considered most significant and examined by the committee, together with their estimated population limits for the entire planning unit, are summarized here, both graphically and narratively.

FIG. 12a

ENVIROMENTAL CAPACITY ANALYSIS

Westside

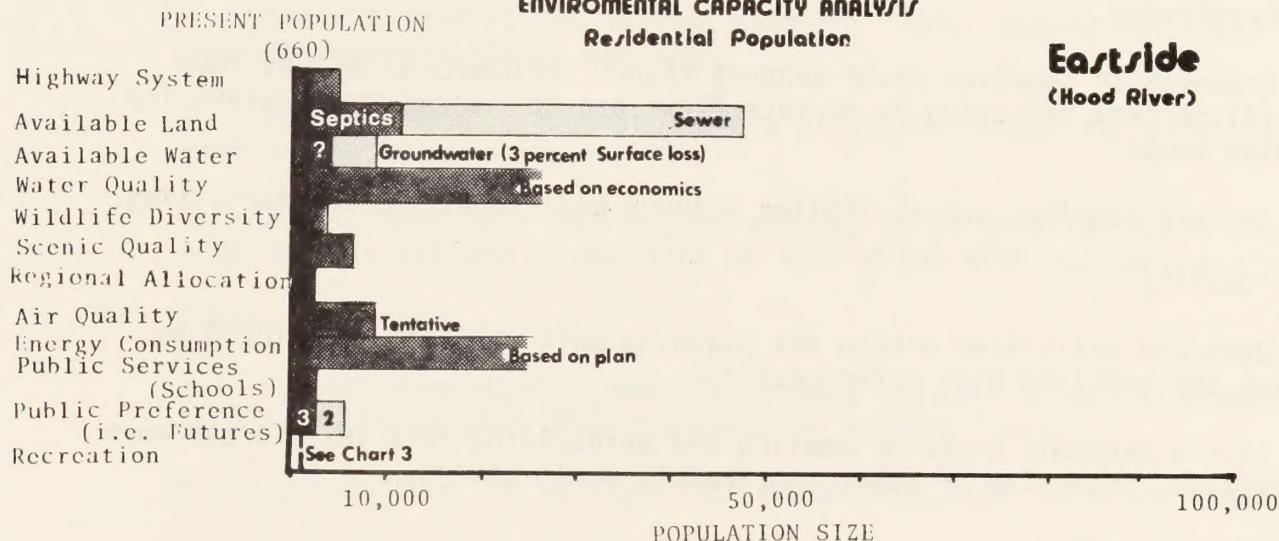
(Clackamas)



ENVIROMENTAL CAPACITY ANALYSIS

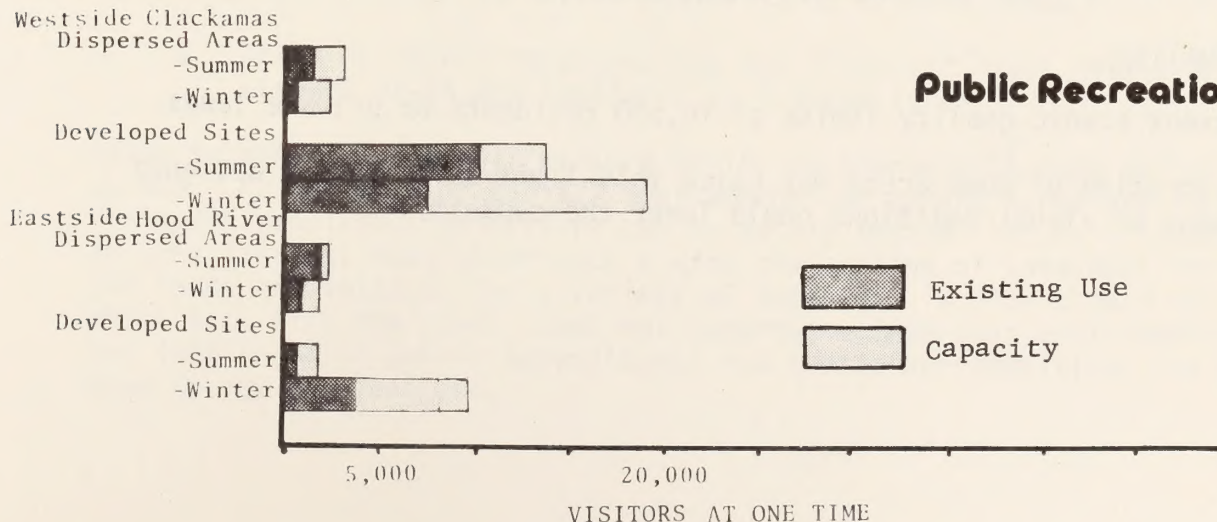
Eastside

(Hood River)



ENVIROMENTAL CAPACITY ANALYSIS

Public Recreation



1. Highway System
 - a. Present design/Highway 26: 9-10,000 residents per day and 2200-3200 visitors per day.
 - b. Projected four lane Highway 26: 40,000 residents per day and 3600-5300 visitors per day.
 - c. Present design/Highway 35: 4000 residents per day and 1400-1700 visitors per day.
2. Available Land
 - a. For development on subsurface sewage: 19-21,000 residents on private lands.
 - b. For development on sanitary sewers: 119,000 residents on private lands.
3. Available Water
 - a. Domestic water supplies presently support 7060 seasonal and year round residents.
 - b. Groundwater supplies could support 68,000 residents with less than four (4) percent reduction in surface flows and no change from present irrigation needs.
 - c. Surface supplies appear limited without additional storage facilities.
4. Water Quality
 - a. Uses and activities within the planning unit will not be allowed to degrade the existing high water quality.
 - b. Unless economic costs of meeting and maintaining this level prove more restrictive, interplay of other constraints would govern.
5. Wildlife Diversity
 - a. Low of 1640 and high of 4110 additional population.
 - b. Total of four square miles of additional development.
6. Scenic Quality
 - a. Present scenic quality limits of 16,600 residents on private lands.
 - b. Restoration of some areas may raise this limit while poorly designed development or visual additions could lower the capacity.

7. Public Recreation

- a. Present facilities and areas can support 24,500 summer visitors per day and 31,500 winter visitors per day.
- b. Additional capacity could be provided with new facilities and maintenance funding.

8. Regional Allocation and Perspective

- a. Year 2000 Prospects: A low of 13,600 residents, up to a high of 20,500 residents.

9. Air Quality

- a. Other factors appear more restrictive due to weather dispersal patterns.
- b. Tentative upper limits of 66,000 residents on private lands without finalized air quality standards.

10. Energy Consumption

- a. Present traffic and housing patterns could consume 450.240×10^9 BTUs of heat energy equivalents per year.
- b. Present plans and zoning have a projected demand for eight times as much energy consumption.
- c. A full four lane facility on Highway 26 at capacity could mean fourteen million gallons of gasoline or 1686.8×10^9 BTUs consumed per year.

11. Public Services

- a. Present elementary school facilities and on-site design expansion potential could support 9700 residents on private lands.
- b. Calculations for police, fire protection, etc. were not completed.

12. Public Attitudes and Opinions

- a. Based on recent public response, the two "Futures" most preferred would support 13-25,000 residents on private lands.
- b. Based on recent response, the two "Futures" least preferred would support 37-66,000 residents on private lands.

Taken together, an overall pattern begins to emerge with some definite reference points. Priorities for capital improvements or expenditures are very clear and different population objectives can be easily tested. It is a useful guide for an area like Mt. Hood where such a wide competition of interests are encountered and lands are suitable for a variety of purposes. A plan should now be designed which best fits the needs, does not compromise important environmental values nor lead to major public expenditures and avoids overcommitting the resource base to any one land use.

Planning Framework

PLANNING FRAMEWORK

Framework planning policies must be established to assure cooperative resolution important to citizens and agencies concerned with the Mt. Hood Planning Unit.

The following general direction statements apply to all lands within the planning unit, irrespective of the alternatives.

Growth. The general policies to be adopted by participating agencies with respect to growth of recreation population on public lands and resident populations on private lands are (1) the amount of growth, as well as its distribution, will be compatible with the area's character and environmental limitations of the resource base, and (2) the rate of growth, as well as its distribution, will be compatible with the existence of adequate public facilities to support growth as it occurs, and (3) growth will be allocated between the public and private land management sectors on a fair share basis, and will be coordinated.

General Development Criteria. Public or private development will not be permitted which can cause violation of the Clean Air Act or the Federal Water Pollution Control Act or applicable State laws.

Development will not occur on high productivity agricultural land.

No development will occur that would exceed the capacity of existing systems for power and water supply, waste water collection and treatment, solid waste disposal, or transportation unless such systems are planned for expansion and have adequate financing to support operating and expansion as necessary to meet the demands of the new development without violation of the Clean Air Act or the Federal Water Pollution Control Act, and applicable State laws.

Redevelopment and improvement of existing communities and other developed areas is favored over development which will utilize existing agricultural lands, wild areas, woodlands and other undeveloped areas.

Industrial or commercial development will occur only where there is available adequate housing within reasonable distance of the development, for all people who are or may be employed in the operation of the development;

No development will occur on water-saturated lands, such as marsh lands, swamps, bogs, and other wetlands;

There will be no further commercial, residential, or industrial development of the floodplains.

Persons making any portion of the landscape less permeable or impermeable will be required to hold or store run-off water or otherwise control run-off from such lands so that it does not substantially affect or damage natural waterways or adjacent properties.

To the extent possible, upland watersheds will be maintained for maximum

natural water retention;

Utilities, in locating utility lines, will maximize multiple use of utility rights-of-way;

Any major residential development will include open space areas sufficient to provide appropriate recreational opportunities for all residents of the proposed development.

Development Performance. All major development proposals within the planning unit, including roads, public recreation facilities, geothermal, housing projects and community facilities, will observe high-performance site and engineering design principles and practices, be compatible with the natural amenities and character of the mountain setting. They will prepare findings for public review (neighborhood groups, local design committees, etc.) to the extent that:

1. The development will not detrimentally affect or destroy natural features such as ponds, streams, wetlands, and forested areas, but will preserve and incorporate such features into the development's site design.
2. The location of natural features and the site's topography have been respected in the designing and siting of all physical improvement.
3. The development will not substantially reduce the natural capacity of any watercourse, thereby increasing the magnitude and volume of run-off or flooding at other locations.
4. The soil and subsoil conditions are suitable for construction and site preparation and the drainage is designed to prevent erosion and environmentally damaging surface run-off.
5. The development will be free from offensive noise, vibration, smoke, dust, and other particulate matter, odorous matter, fumes, water pollution, and other objectionable influences.
6. The person or agency proposing the use must demonstrate that he will be substantially damaged by being required to place the intended development in alternate locations or sites.
7. The development is in compliance and conforms with all other aspects of the adopted Mt. Hood Interagency Plan and local comprehensive plans.

Significant Project Review. All significant project proposals, regardless of jurisdiction, will be reviewed by an interagency technical resource advisory committee in order to provide advice and recommendation to decision maker authorization.

Public Expenditures. Capital costs of all public improvements necessary for the mountain area's development should be determined for each project. Individuals and groups benefiting from the specific public projects should be identified. Whenever feasible, the public capital expenditures should

be amortized by those receiving the benefits. Generally, inability to arrive at an acceptable and feasible repayment schedule based on direct levies and user charges on the beneficiaries will be considered sufficient evidence to preclude public investment; the project will be considered economically and socially undesirable. This is not intended to prevent general public participation in a project that is consistent with a public goal and need. However, the absolute and relative amount of general public participation must be explicitly identified and justified.

Trespass. Permission should be secured from property owners before any use of private properties. ORV use of private land is specifically prohibited without the owner's permission as provided by Clackamas County ordinance.

ORV Policy Coordination. The Mt. Hood National Forest is now in the process of developing a Forest-wide policy for use of off-road vehicles (ORV). This will include designation of closures and areas available for use. We recognize it is also important that this issue is dealt with in the land use planning process. The preliminary meetings have been held and the citizen suggestions from these meetings, in combination with the land suitability analysis and compatibility of the proposed action on this unit, have been used as a basis for the ORV recommendation and made a part of the proposed action for this statement.

Based on the results of the comments on the proposed ORV policy and responses to this statement, a judgment will be made on an ORV recommendation for the Final Statement.

Critical Area Management. Wetlands, floodplains and steep slopes are considered environmentally critical areas and unsuitable for most forms of land development. Destruction of such resources does not mean just the loss of some "aesthetic" environmental value or benefit, but also loss to the social and economic welfare of the community.

Destruction or disturbance of these areas will affect the community by either (1) creating hazards such as flooding and land slippage, or (2) destroying important public resources such as water supplies and water quality of lakes and rivers, or (3) wasting important productive lands and renewable resources.

The direct costs of not protecting these areas are high. Numerous examples of this can be found in the mountain area. In the private sector, costs include reduction of property values or actual destruction of property; in the public sector, this includes finding alternative sources of water or installing expensive storm sewers and water treatment systems.

Local regulation is necessary not only because of the public character of the resources, but also because the private sector does not adequately consider the costs and benefits of protecting these resources. More often than not, problems associated with developing these areas are usually passed on to the entire community or to the neighboring properties.

The public objectives of a regulatory program designed to protect these land areas are traditional: (1) the protection of public safety by

reducing the risk of landslides, flooding and fire; (2) the prevention of nuisance-like uses by controlling erosion, runoff and water pollution; and (3) the reduction of public costs by preserving water quality and public water supplies.

Streamway Management. Streamways and river corridors will be protected. Development will be limited to allow for the natural movement of water within designated control areas, as determined by the county and cooperating public agencies.

Relocation of stream channels and bank protection devices will be limited to emergency measures for purposes of protecting existing structures. Bank protection will not be used to stabilize unstable soil formations for the purpose of constructing or maintaining undeveloped building sites.

Wildlife. Activities will be carried out in a manner that will provide for the permanent maintenance of habitat types (including old-growth and snag habitat) for native wildlife species now occurring in the planning unit. Wildlife populations will be monitored to avoid an extreme overpopulation on one hand and elimination of species on the other.

Mineral Management. The objectives are to integrate development and use of mineral resources with use and conservation of all forest resources to the fullest extent possible under the laws governing mineral disposal. All proposed projects on federal lands will be reviewed through an environmental analysis report. When compatible with other resources, Forest Service, BLM and county permits may be issued for commercial development of common mineral materials not subject to location under mining laws.

Air Quality. Air quality levels will be maintained to EPA Level 1 standards.

Water Quality. No activity under any alternative will be allowed to degrade water quality below the established State of Oregon Water Quality Standards as stated in Chapter 340 of the Oregon Administrative Rules, Sections 41-205 General Water Quality Standards and 41-090 Special Water Quality and Waste Treatment Standards for the Clackamas River Basin, Molalla River Basin and Sandy River Basin.

LAND CATEGORIES

A common system of resource classification and related management criteria is needed to minimize variations between agencies within the planning unit. The following "Land Categories" are intended to provide such a reference, and will apply to all alternatives.

AREA I - ENVIRONMENTAL PROTECTION

CHARACTERISTICS

These areas are represented by fragile environmental conditions or unique plant and animal associations and have a high preservation value because of their scarcity and vulnerability. Marshes, floodplains and other areas of poor natural drainage which are included in this category provide for exclusive and varies types of wildlife habitat and play vital roles in protection and management of surface and ground-water resources.



GENERAL POLICY STATEMENT

Area managed to avoid hazard to people and property and protect unique biological areas from public abuse.

RESOURCES AND ACTIVITIES

Scenic - Meet the scenic quality standard of preservation.

Fish and Wildlife - Retain characteristics necessary to keep existing species diversity.

Watershed - Avoid disrupting hydrologic processes or degradation of water quality.

Livestock Grazing - Not permitted

Timber - Timber removal for public protection such as removal of logs from stream channels to prevent their damaging downstream property during high flows.

Minerals - No permits shall be issued to remove common varieties of mineral materials not locatable under mining laws.

Recreation Development - Not permitted

Transportation - Trails will be provided to facilitate protection of unique biological areas. Roads will be provided only for crossing floodplain areas.

Motor Vehicles - Off road vehicles will be limited to designated areas and routes.

Snow Sports - Limited to designated areas and routes.

Fire Management - Fire protection provided. Fuels management will be limited to prescribed fuel treatments designed to retain natural processes within area.

Ownership - Recommend exchange or purchase of private lands to public ownership (state, county or federal) .

Floodplains - Floodplains will be maintained as natural drainageways. No permanent structures are permitted which would inhibit flood stream-flows or endanger other property.

Scenic forest, farm, outdoor recreation and other open space uses not requiring permanent structures are consistent uses within the floodplain. Existing structures within floodplains will eventually be phased out or relocated to lands outside of flood hazard areas.

New development on stream terraces consisting of unconsolidated soil material subject to rapid water erosion during periods of high stream or river runoff will maintain 100 foot setbacks from 100 year floodplain. (The 100 year floodplain is to be determined by the natural bank dropoff to the current floodplain of the stream when flood data is not available or insufficient to make accurate determination.

Materials which may be inundated should be of such strength and quality that they will not deteriorate or should be able to withstand water pressure or the high velocity of flowing water.

No impoundment of free flowing streams is permitted except at designated sites.

The National Flood Insurance Program (PL-90-448) and the Flood Disaster Protection Act of 1973 (PL 93-234) will be available to compensate for property losses. Planned Development, conservation easements and acquisition by public bodies should be considered as methods to protect floodplains.

The riparian environment* will be preserved based on detailed river management studies.

New commercial or industrial development will not be allowed within 200 feet adjacent to the Salmon River, Zigzag River, the Sandy River and East Fork of Hood River.

Wetlands - Activities considered compatible include: conservation of soils, vegetation, water and wildlife; low intensity outdoor recreation which is dispersed and directed; research and educational workshops on a request and permission basis; and utility easements and low standard roads or driveways, but only on peripheral areas and where alternative alignments are impractical. Activities considered incompatible include construction, filling, damming, excavation, grading and removal of vegetation.

Development permitted on bordering lands will maintain the same runoff coefficient and erosion equilibrium as if they were undeveloped. Pier construction, elevated pedestrian boardwalks, sediment catch basins, semi-impervious surfacing, understructure parking, bridging of natural drainage-ways, and retention of vegetation in areas not intended for improvement are applicable methods of site design.

Tax deferrals and elimination of special utilities assessments for private wetland owners can be used as techniques for fair compensaion; however, further tax relief incentives and guidelines for maintenance and long term management are needed.

Public agency acquisition and management of private wetlands is felt to be too costly and impractical in most circumstances, but will be a consideration in cases of large ownership parcels or abutting private and public owner-ships.

Cooperative planning and development (including density-sharing) based on amount of suitable land of individual properties encompassing or bordering wetlands is encouraged and will be an important factor in weighing requests for project approval within attendant watersheds.

More precise characterization of known wetland areas and assessment of long term management needs and strategies should be undertaken as as assignment of plan implementation. This could include better definition of the values associated with these areas as unique biological/botanical communities, and monitoring of impacts created by peripheral urbanization.

* See Glossary

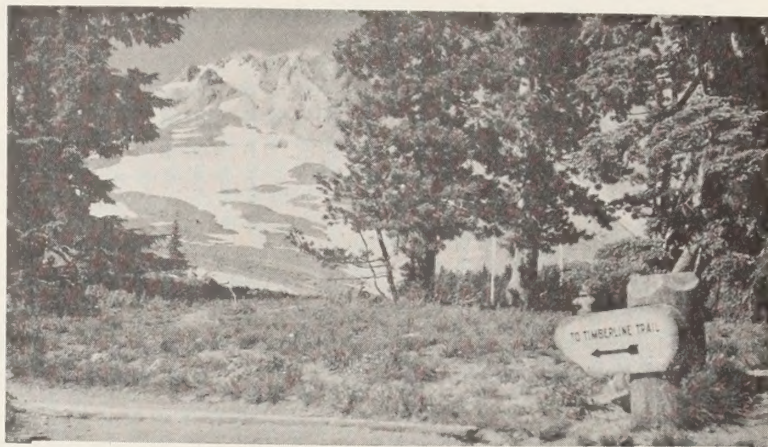
DESCRIPTION

This includes the presently-classified Mt. Hood Wilderness as well as other areas meeting basic wilderness criteria and recommended for formal wilderness study.

The area is high elevation mountain terrain presently unroaded and undeveloped. Soils, vegetation, geology and climate vary significantly.

GENERAL POLICY STATEMENT

Existing Wilderness will be managed to meet the requirements of the Wilderness Act of 1964, and Secretary of Agriculture Regulations. Wilderness Study Areas will be managed to protect this character until a decision is made regarding wilderness suitability. Inventoried roadless areas will be recommended for and managed as Wilderness Study Areas.



RESOURCES AND ACTIVITIES

Scenic - Preserve natural character.

Fish and Wildlife - Habitat changes to follow natural succession.

Grazing - Not permitted

Timber - Tree removal not permitted.

Minerals - Current mining laws for wilderness apply in the areas designated for Wilderness Study. General mining laws will not apply to wilderness included in the 1964 Act after December 31, 1983.

Recreation Development Sites - No new facilities

Transportation Facilities - No roads permitted. Provide low density trail system.

Motor Vehicles - No motorized use

Snow Sports - No motorized use

Fire Management - Fire suppression will be planned. However, suppression methods will be limited to the techniques and equipment which least alter the landscape or disturb the land surface.

Utility Corridors - Not permitted.

Other Ownership - Recommend exchange of or acquisition of county and private lands within area to federal ownership.

AREA 3 - DISPERSED RECREATION

DESCRIPTION

These areas are high elevation, lower producing timber sites, visually diverse, and generally not accessible by roads. Soils, steep slopes, and geology restrict development and intensive timber harvesting.

GENERAL POLICY STATEMENT

Manage the area for dispersed recreation, maintaining near natural conditions, permitting only those activities compatible with its character.

RESOURCES AND ACTIVITIES

Scenic - The retention quality objective will apply to foreground* and middleground areas viewed from roads and trails. The partial retention standard will apply to other areas.

Fish and Wildlife - Habitat changes to follow natural succession.

Watershed - Retain existing water quality

Livestock Grazing - Permitted in designated areas.

Timber - Landscape harvest will be planned to retain primitive character of area, meet scenic objectives and control forest fuel buildup. Timber on BLM and Forest Service lands will be placed in a special category and not be part of calculated allowable annual harvest.

Minerals - No permits will be issued to remove common varieties of mineral materials not locatable under mining laws.

Recreation Development - Additional trails and trail camps will be permitted.

Transportation

Roads - Those necessary to serve recreation facilities

Trails - Provide additional trails for public use and enjoyment

Helispots - Provide helispots* as determined by preattack planning.

Motor Vehicles - Will be confined to routes designated by individual owners or agencies.

Snow Sports - Motorized snow machines permitted in designated areas. Other snow activities are permitted throughout.



* See Glossary

Fire Management- Provide shaded fuel breaks through controlled burning and removal of fuels. Fuel break construction will only be done with proven techniques. Fuels management and control facilities as directed by Cooperative State and Federal Fire Plan.

Other Ownership - Private ownership will be considered candidate for exchange or acquisition by public agencies.

AREA 4 - DEVELOPED RECREATION

DESCRIPTION

Areas generally on public land suited for skiing due to slope, snow retention, elevation and aspect, and which generally fit existing or recommended ski areas. Other areas are sites suited for developed campground, golf courses, etc. and are characterized by gentle slopes and good accessibility.

GENERAL POLICY STATEMENT

Areas will be used for developed recreation facilities to include auto campgrounds, ski areas, visitor centers, golf courses, etc.

RESOURCES AND ACTIVITIES

Scenic- Sites will meet modification objective and foreground/middleground viewed from site will meet partial retention objective.

Fish and Wildlife - Managed to maintain species diversity outside principal use area.

Watershed - Retain existing water quality. Sewage will be subsurface on suitable lands or treated to maintain water quality standards.

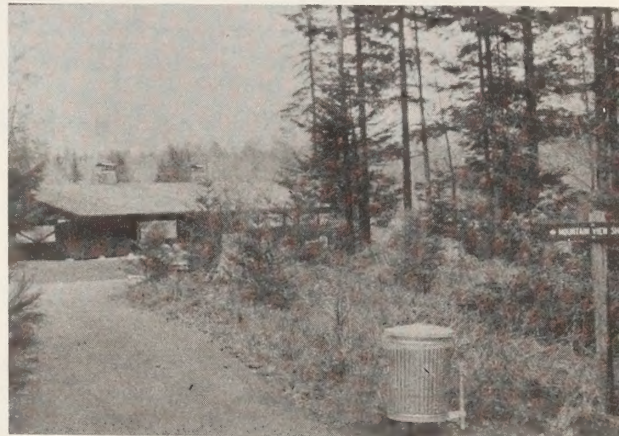
Livestock Grazing - not permitted

Timber - Special harvest (programmed) meeting scenic and fire management objectives. Timber on BLM and Forest Service lands will be placed in special category and not be part of calculated allowable annual harvest.

Minerals - Developed recreation sites will be withdrawn from mineral entry.

Recreation Development - Developed sites will include necessary waste disposal, water and service roads and power. Environmental carrying capacity will determine maximum permitted use level

Transportation - Roads and trails will be designed to accommodate developed recreation use.



Motor Vehicles - Limited to designated routes.

Snow Sports - Motorized use, cross country and downhill skiing, snow play permitted in designated areas.

Fire Management - Maintain low fuels levels adjacent to developments. Provide fire protection to buildings within the area through a rural fire department.

Ownerships - Consideration of exchange where advantageous to improve management of the developed area.

AREA 5 - SCENIC FOREST

DESCRIPTION

Forest lands which are capable of sustained production of timber and have high scenic or watershed conservation values. Much of the scenic forest is on steep ground with some exceptions in Hood River County. The areas by their setting are significant for retention of a high quality visual and recreational experience. Also included within this class are forest lands within designated or community watersheds.

GENERAL POLICY STATEMENT

Areas will be managed for timber production and to retain or partially retain landscape character and scenic quality while maintaining watershed quality. Recreational facilities will be permitted and could include roads, car camps, trails and trail camps.



RESOURCES AND ACTIVITIES

Scenic - Visual Quality

Objectives. Character retention for foreground from roads open to public, wide trails, camps and trails and areas of unique scenic variety. Partial retention of character in middleground and background as seen from primary viewing location.

Fish and Wildlife - Big game forage will be maintained or increased through timber management. Maintain fishery habitat in lakes and streams through adherence to streamside management policies.* Harvesting will not be permitted adjacent to wetlands(bogs, marshes, swamps,* etc). Width of impact zone to be determined by onsite investigation. Provision will be made for existing and future snags* and whips.* Management policies will allow for sustaining snag habitat and plans to dedicate live trees in timber stands to become future snags. Whips should be left in harvest areas. Snag clause will conform to State Safety Code and State Fire laws.

* See Glossary

Watershed - Retain existing water quality. Sewage will be subsurface on suitable lands consistent with state standards.

Agriculture - Cattle grazing will be permitted. Available forage and water quality standards will be the principal determinant for numbers of animals. Farming is permitted.

Timber - Timber will be produced and harvested using practices designed to meet water and scenic quality standards. Modify log haul by seasonal limitations to reduce conflicts with recreation use. Harvesting of timber on private lands will be done in conformance with Oregon Forest Practices Act, LCDC Regulations and County Comprehensive Plans.

Minerals - Rockpits and stockpiles will not be located in the foreground unless they can be screened from direct view and meet visual water quality constraints. Meet reclamation requirements of State Department of Minerals and Geology.

Recreation Development - Maintain and expand existing carcamps within the unit. Increase camps available for overnight and day use.

Transportation

Roads - Narrow single lane roads with turnouts will be used. Other low standard roads will be constructed as required for management.

Trails - Provide new low standard hiking trails and horse trails.

Helispots - Provide as needed and meet scenic quality standards.

Motor Vehicles - Trail bikes will be limited to roads and designated trails. Four wheel drive and all terrain vehicles will be limited to routes designated by the Forest Service, Bureau of Land Management and Oregon State Forestry Department, Clackamas and Hood River Counties. Motor vehicle use will be restricted from the Wildcat Mountain and Pacific Crest Trail systems.

Snow Sports - Permission necessary on private lands. On public lands, no limitations except motorized use will be confined to designed areas.

Fire Management - Through preattack planning*, identify opportunities to develop and maintain shaded fuel breaks and fire facilities (pump chances, helispots, etc) through timber harvest prescribed burning and disposal of logging slash. Pursue active fuel management program to reduce forest rate of spread to a moderate level. Use active public involvement program to keep fire risk from man causes to an acceptable level. Fire management as directed by Cooperative State and Federal Fire Plan.

Ownership - Encourage consolidation of ownership patterns where necessary to improve forest management.

Housing - On private lands, one dwelling unit and accessory uses per 20 acres or ownership whichever is greater will be permitted.

* See Glossary

AREA 6 - GENERAL FOREST

DESCRIPTION

These are generally high producing forest lands which due to slopes, stable soils and geologic conditions, are manageable for commercial timber purposes. They receive large amounts of precipitation and have high water yields. Productivity is variable, with site indexes ranging from 100 to 180. These areas are moderate to low in visual variation and are suitable for development.

GENERAL POLICY STATEMENT

Areas to be managed principally for intensive timber management on sustained yield basis but permitting other activities.

RESOURCES AND ACTIVITIES

Scenic - Areas will be managed to meet modification or maximum modification visual quality objectives.

Fish and Wildlife - Timber harvesting will provide different age classes of Douglas-fir (or other plantation tree species) habitat types. Timber management will maintain snag habitat. Fish habitat will be maintained under cooperative stream-side management policy.

Watershed - Meet state water quality standards.

Livestock Grazing- None planned but use permitted.

Timber - Timber will be managed to retain high productivity of sites.

Minerals - Permits will be required to remove common varieties of mineral materials not locatable under mining laws.

Recreation Development - Developments will be limited to those compatible with forest management, i.e. hunting camps, day use facilities.

Transportation - Roads will be designed to be low impact, efficient for logging and safe for log haul and public travel.

Motor Vehicles - Confined to roads or designated routes on public lands.

Fire Management - Through preattack planning, identify opportunities to develop and maintain shaded fuel breaks and fire facilities (pump chances, helispots, etc) through timber harvest, prescribed burning and disposal of logging slash. Pursue active fuel management program to reduce forest rate of spread to a moderate level. Use active public involvement program to keep fire risk from man causes to an acceptable level. Fire management as directed by Cooperative State and Federal Fire Plan.



Ownership - Encourage consolidation of ownership pattern where necessary to improve forest management.

Housing - On private lands, one dwelling unit and accessory uses per 20 acres or ownership, whichever is greater, will be permitted.

AREA 7 - FARM

DESCRIPTION

Areas now under cultivation or suitable for farm crops based on soil type, slope and frostfree season or elevation. They are generally suited for development, with a timber suitability factor of moderate to non-commercial.

GENERAL POLICY STATEMENT

Agriculture land will be preserved and maintained for farm use by using exclusive farm use zoning pursuant to ORS Chapter 215.



RESOURCES AND ACTIVITIES

Housing - The minimum lot size shall be 20 acres. All housing within the agriculture areas shall be accessory to farm use including a principal residence and other housing needed to operate farm uses.

Public Facilities- Extension of services such as sewer and water supplies will be designed and constructed to meet the needs of farm use and nonfarm use established under ORS 215.213.

Services that need to pass through agricultural lands will not be connected with any use that is not allowed under ORS 215.203 and 215.213 and assessments shall be for only the needs of the farm unit.

Other Activities - Forest and extractive activities are consistent with the resources production direction of this land use definition. All extractive uses would meet the requirements of the Department of Geology and the Mineral Industries.

Other other space uses compatible with farm usage are consistent with this land use classification.

A building setback and/or buffer* zone of a minimum of 50 feet (determined by county) will be established between farm land and residential land. The buffer will be provided and maintained on land owned by the property owner introducing the new use.

* See Glossary

AREA 8 - HOUSING

DESCRIPTION

Areas suited for development due to soils, slope, geologic stability, or serviceability. Generally, these lands are suited for timber production or management, developed recreation, and in some cases, agriculture. Sites are variable in visual variety, ranging from low to high based on natural setting and prior development.

AREA 8A - RURAL RESIDENTIAL HOUSING

GENERAL POLICY STATEMENT

This area provides for farm and forest uses as well as very low density housing.

RESOURCES AND ACTIVITIES

Housing - Density within this area will be five acres or more per unit* with a minimum of one acre suitable for sub-surface disposal. Planned unit development or cluster housing will be allowed.



Other Activities - Farm forest and recreational activity are compatible uses. Scenic quality standards of partial retention will be met. Public water supply will be required on the eastside of the Planning Unit and individual wells for domestic purposes will be permitted on the westside.

AREA 8B- LOW DENSITY/RECREATION HOUSING

GENERAL POLICY STATEMENT

This area provides for a variety of housing types and density including seasonal or permanent residences.

RESOURCES AND ACTIVITIES

Housing- Density within this area will be a minimum of one suitable acre or more per unit without sanitary sewers.



With sanitary sewerage, the density will be no more than four units per suitable acre. Planned unit development* or cluster housing* will be encouraged or required for large developments.

Other Activities - Commercial, farm and forest uses are not compatible with low density residential. A buffer area will be provided and maintained on the lands being developed for residences. Thinning of vegetation material will be permitted for fire protection and public safety.

Scenic - The visual quality objective of partial retention will be maintained.

AREA 8C - PLANNED RESORT HOUSING



GENERAL POLICY STATEMENT

This area provides for the highest density residential use and encourages resort oriented development and overnight accommodations.

RESOURCES AND ACTIVITIES

Housing - Housing density in this area will be no more than six units per acres or equivalent in terms of floor area. Planned development will be required for new proposals.

Other Activities - General forest and farm activities are not compatible with planned resort developments. A buffer zone will be provided and maintained on lands being developed for residences. Thinning of vegetative material will be permitted for fire protection and safety. Recreation related development will be encouraged.

Scenic - The visual quality objective of partial retention will be maintained.

Public Facilities - Sanitary sewers, adequate water supply and fire protection facilities will be required.

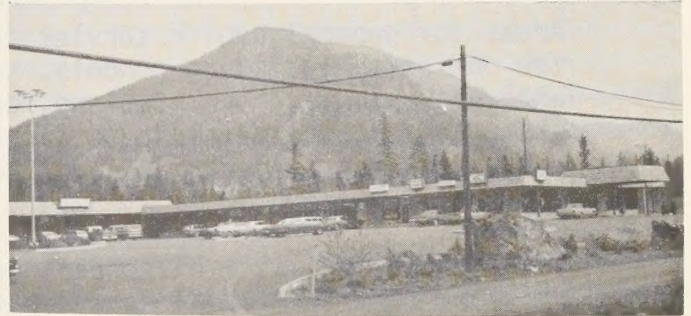
AREA 9 - COMMERCIAL

DESCRIPTION

Suitability characteristics are generally consistent with the housing category and established or proposed use patterns.

GENERAL POLICY STATEMENT

This area will provide for retail sales and services residents and visitors within the Planning Unit. Existing standards relative to design, landscaping, parking and clustering of commercial facilities on a designated center basis are to be rigidly enforced. In general, these include: (1) new development will be of integrated and harmonious design, together with adequate and properly arranged traffic, parking facilities and landscaping; (2) new development will enhance and protect the scenic roadway character of Highway 26 by observing deep setbacks, retaining native vegetation and trees, and minimizing the number and scale of signs; (3) existing commercial facilities will be encouraged to upgrade and cooperate with new developments in providing adequate parking, safe access, coordinated landscaping and more functional service for the highway public and resident community.



RESOURCES AND ACTIVITIES

Services - Fire Protection, adequate water supply and means for sewage disposal are required.

Standards- Standards related to desing, landscaping, parking and clustering of commercial facilities on a designated center basis are listed in respective county plans. No changes are currently proposed and these standards will apply throughout the Planning Unit.

AREA 10 - INDUSTRIAL

DESCRIPTION - Suitability characteristics are generally consistent with the housing categor and established or proposed use patters.

GENERAL POLICY STATEMENT

Areas for industry utilization of resources within the Planning Unit.

RESOURCES AND ACTIVITIES

Services- Adequate fire protection, waste disposal and water supply will be required.



Scenic- Development will meet maximum modification visual quality objective. This will include landscaping in keeping with character of the area.

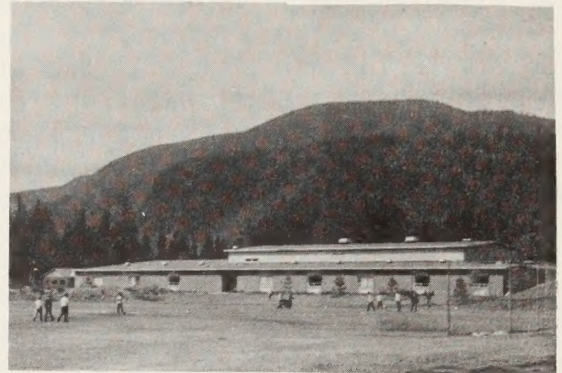
Standards- State Industrial Performance Standards for air quality (emission levels and odor), noise levels and water quality.

AREA 11- SPECIAL SITES

DESCRIPTION AND GENERAL POLICY STATEMENT

Areas for general public services to the community including schools, sewer and water plants, fire stations, county, state and federal maintenance facilities, ranger stations, electrical substations, etc.

Sites of unique value of special purpose which warrant individual consideration. Development proposals within this category will be highly regulated and subject to visual, air, water and noise performance standards. Unique sites and features will be protected.



RESOURCES AND ACTIVITIES

1. Geothermal exploration shall be limited to Old Maid Flats. Exploration will be for the purpose of locating geothermal water. Subsurface geothermal development for water would be permitted but not for steam. Visual, air and noise standards of the classified land use will apply.
2. The Bonneville Power Administration Utility Corridor has as its prime purpose, the maintenance and safe conduit of electrical energy. Any modification of the existing corridor will meet a scenic quality of partial retention by the technique of rehabilitation.^{1/} The corridor through public land will be available for Christmas tree and huckleberry harvesting. Off road vehicle use will be permitted on existing service roads within the right-of-way. The corridor will be closed to vehicular use during the period when winter range is in use.
3. The general policies concerning solid waste disposal sites as stated in the Clackamas County Comprehensive Plan will apply to this area.
4. Historical and archaeological sites or areas will continue to be inventoried and evaluated to assure compliance with the National Historic Preservation Act of 1966 and Executive Order -1593, May 13, 1971, "Protection and Enhancement of the Cultural Environment."

^{1/} National Forest Landscape Management, Vol.2, Ch.1, USDA Handbook 462

5. A summit area fire facility near Government Camp is recommend and would contain a heliport, temporary quarters for crews and a limited fire cache. The opportunity exists for this to be a cooperative interagency center composed of Government Camp Community Fire State, the State Forestry Department and U.S. Forest Service, sharing common services.

The Proposed Plan & Alternatives

INTRODUCTION

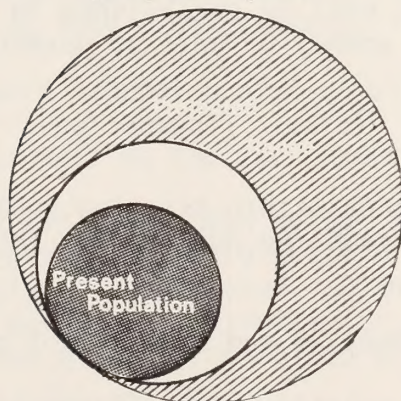
This section contains the proposed Mt. Hood Interagency Plan and Alternatives. Environmental impacts are addressed, including an assessment of relationships to environmental capacity and the framework provisions for growth management. This proposed plan and its alternatives all have their respective capacity for overall population density. The Proposed Plan and Alternative B reflect an aggregate viewpoint of existing planning direction, interagency goals, the limits imposed by individual capacities or constraint factors, and recognition of distribution problems associated with land use arrangement and allocation of support facilities. Alternative A represents the present situation in terms of planning and land use trends. Under this alternative there is the potential that many elements of environmental capacity would be significantly compromised.

PROPOSED PLANPerspective

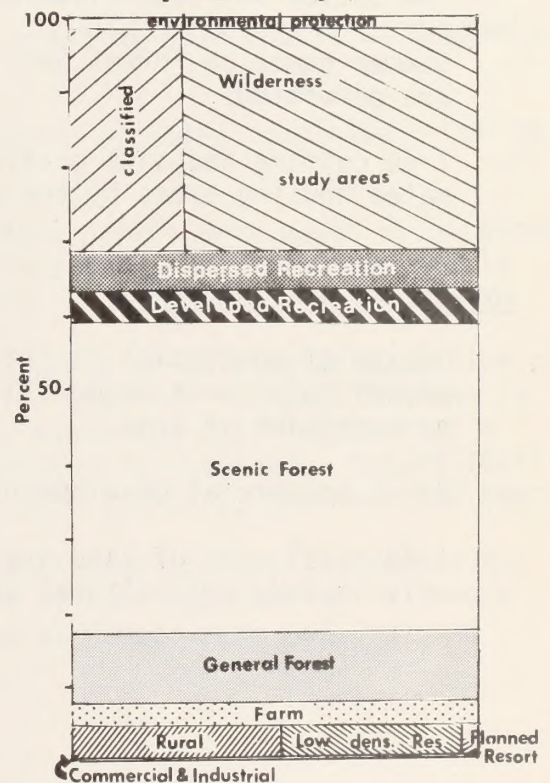
This proposed plan is oriented toward improving efficiency of land use in the area by concentrating development in areas already committed, providing adequate support services, increasing agricultural and timber productivity and maintaining the overall mountain area character. A balance of use is emphasized minimizing external costs of development upon the public. Thus, Highway 26 is proposed for improvement, but only to the extent required by the proposed use level.

Sewage collection systems will need to be improved and expanded within compact, defined service areas. Total range in the population provision of the proposed plan is from 16,000 to 29,000 with two optional levels indicated. Alternate "level 1" provides a design potential of 16,000 to 21,000 and service commitments to the more established areas; "level 2" assumes an additional sewer services area on a future priority basis in Brightwood which shifts the potential upward to 20,000 to 29,000 population.

DESIGN POPULATION
proposed plan



ACREAGE ALLOCATION
proposed plan



Agriculture and Forestry

- Both agriculture and forestry are emphasized. Designation for farm use will be given to 3,800 acres (3,350 in Hood River County).
- A variety of management programs will be encouraged on agricultural lands to maintain a high level of farm production. All lands currently in agricultural production will be maintained and necessary protective zoning measures will be adopted.
- A forest classification is given to 78,310 acres. These areas will be available for full-yield timber production with the exception of recreation travel corridors, hillsides visible to community areas, streamside corridors and wetland buffers. A full range of silvicultural practices will be used, designed to keep sites productive and trees in healthy condition. Soil erosion and slippage is to be avoided while meeting scenic standards and protecting habitat diversity for wildlife.

Housing

- Housing patterns will be mixed. This would be established by zoning some areas for farm, rural residential, recreational residential, and low density planned unit developments, as well as intensifying present resort areas. There would be no appreciable change in the density standards of existing plans in recommended service areas. Eventual resident population could reach either of two levels, depending upon service area decisions made for Brightwood. Separation of local communities will be maintained.
- Additional overnight or resort housing accommodations (condominiums, motels, hostels, etc.) will be encouraged at Government Camp, Welches, and Timberline Lodge, with facilities on private land having preference for development. The option of resort-like housing exists near Mt. Hood Meadows.
- Summer homes on Forest Service lands will be retained. No additional sites are permitted.
- Tree cutting and site grading standards will be established in all designated housing areas by the appropriate agency or unit of government.

Commercial and Industrial

- Growth of commercial facilities will occur within existing centers as needed to service communities and the traveling public, but there would be no expansion of area.
- Strip commercial development along Highway 26 and 35 will not be permitted.
- Industrial uses of land are limited to existing areas (Parkdale) and will only include agricultural processing and farm or forestry support activity.

Wilderness and Primitive Recreation

- Zigzag Mountain and Mt. Hood Wilderness Study Areas will provide opportunities for addition of up to 32,500 acres to the existing Mt. Hood Wilderness (14,000 acres).
- In designated wilderness, trails will be provided to protect wilderness values. Those in conflict with those values are to be abandoned.
- Outside the designated wilderness, existing trails will be maintained and additional trails provided. Approximately 8,700 acres will be designated for primitive or dispersed outdoor recreation activity, to include hiking in an unaltered forest setting.
- A low elevation trail system in the Zigzag-Still Creek Area will be provided subject to consultation with residents.
- Additional areas with more convenient public access would be provided for such activities as primitive car camping, hiking, fishing, hunting, berry-picking, woodcutting, and roadside viewing. Some 78,300 acres of classified General Forest and Scenic Forest lands would be available for this purpose.
- The trailhead for Ramona Falls Trail will be moved back a mile and a half to the end of the existing pavement.
- Designated areas for off-road motorized vehicles (ORV) are shown on the planning maps and signs will be posted in the field.

Concentrated Recreation and Skiing

- Though not exclusive use areas, there will be 7,100 acres designated to allow developed recreation facilities and accommodations.
- The existing Wildwood recreation area will be expanded, with additional day use facilities and trailhead-bridge connection to the Wildwood Trail.
- An area is designated for expansion of the existing golf course at Bowman's Resort in the Welches area.
- On federal lands all ski areas will have master planning completed prior to beginning future developments.
- A westward expansion of the Multnomah-Ski Bowl permit area would allow access to additional downhill terrain at higher elevations, providing for family usage as well as the more experienced skiers.
- New terrain could open up for Mt. Hood Meadows by permitting an expansion of the permit area toward White River. A master plan for Mt. Hood Meadows is currently being prepared. Planning for any expansion will insure that a visual management objective of partial retention is obtained. Future facility expansion will be controlled by a balanced base capacity, ski capacity concept.
- Cooper Spur could be considered for additional developed ski terrain and expanded facilities. Additional assessment of this possibility is needed. No overnight accommodations are anticipated at Cooper Spur but could be provided at Parkdale.

- Timberline Lodge will provide overnight accommodation capacity for 250 persons; downhill skiing will continue with a "moderate-level" increase in lift capacity and new summer ski area on Palmer Glacier. A day lodge will be added governed by the concept of balanced on-site capacities. The main lodge is to be managed under a stronger historic preservation program than in the past.

Wildlife and Fisheries

- An approximate 3,600 acres for environmental protection will be set aside for wildlife and fisheries, as well as conservation and scenic recreation purposes.
- Harassment of wildlife by people and free-ranging dogs could increase. Poaching and dogs would be controlled through local community efforts and assistance, educational programs and enforcement of existing regulations by State Police and County Sheriff's offices.
- Winter range would be maintained in several lower elevation areas, with an active management program for deer and elk. Closure of forest roads will take place in winter months to reduce big game harassment. Opportunities for wildlife viewing would be provided along trails and roads.
- The existing anadromous (salmon and steelhead) fisheries will be expanded through programs such as construction of the rearing ponds along the Salmon River. An active trout stocking program will maintain fishing opportunities.
- Minimum streamflow recommendations for aquatic fish habitat and free flowing character are established policy.
- Future roads across stream courses will provide for fish passage and consider facilities for fish stocking (i.e., access ramps).

Minerals, Energy and Power

- Existing rock quarry sites such as Robinson, White River and Brightwood will continue to be utilized. Performance standards and reclamation plans are required.
- Geothermal hot water use would be a permitted use, except in designated wilderness or Wilderness Study Areas. Development of sources will be highly regulated and conditional to: (1) demonstrating a developable, self-sustaining source without environmental effects on groundwater and adjacent activity areas or communities; (2) transmission will be within existing power or roadway corridors; and (3) visual, air, water and noise performance standards.

- Existing power transmission corridors (e.g. Bonneville Power Administration) will be retained. No new corridors are planned. Landscape management and revegetation programs by public agencies will be established to make the corridors blend better with the natural landscape. Underground power utilities in all new developments is required and underground placement of existing overhead wiring along Highway 26 will be encouraged.
- Gasoline usage and domestic consumption of home fuels could increase significantly; however, energy efficient construction will be encouraged and developments will be more concentrated, minimizing overall consumptive demands. The relative increase in fuel consumption will be potentially less than under Alternative A.

Transportation

- Highway 26 from Welches Road to Rhododendron would require an improved two-lane or three-lane facility. The segment between Brightwood and Welches Road would need a three or four-lane improvement, depending upon the amount of growth encouraged. A two-lane or three-lane (includes climbing lane) from Rhododendron to Timberline Road is projected. Highway designs will conform to the Safe Highways Act, and will take into account noise abatement. Protection and enhancing the scenic character of the highway corridor is high priority. Parkway design concepts will be encouraged, particularly in old growth stands near Wildwood (A. J. Dwyer Memorial Corridor). Highway 35 would need improvement at the Mt. Hood Meadows intersection, but it is basically adequate at present.
- The local road network will be expanded and improved in expanded use areas. In private development areas, private maintenance would be encouraged. There will be an increase in the timber support road system, public and private.
- Increased parking capacity at ski and resort areas will not be encouraged. Additional emphasis will be placed on providing mass transit to accommodate peak recreation use, including consideration of an elevated community transit system in Government Camp, connecting main ski areas with the business center and Timberline Lodge.

Services and Public Facilities

- Improvement and expansion of sewer and water services in Welches and Government Camp would occur; recommended service boundaries are indicated on the planning maps. Creation of a community service system for Brightwood will follow correction of the sanitary problems and securing of services in the Welches area, and would be based on need. (See appendix, STR report.)
- Improved domestic water facilities will be needed especially in the proposed community sewer service areas, and supply must be adequate to serve the intended design capacities. More effective utilization of existing suitable community systems and private investments in combination with new geologically-sited groundwater sources (rather than any additional surface water diversions) will be framework criteria in future water use and allocation policies.

- In all areas not served by sewers, on-site sewage disposal will meet DEQ standards.
- Older platted areas outside of community sewer service areas will need to be reviewed by the State and County to determine redesign opportunities and feasible densities on subsurface disposal.
- In areas of high recreation use, sanitary systems for public convenience will be provided. There will be public education programs on wilderness sanitation.
- Central disposal sites for transferring solid waste will be established in both the westside corridor and north approach.
- Additional fire protection for forest lands would include management of forest fuels, fire suppression forces and resource activities to prevent major uncontrolled fires. A combined forest fire suppression headquarters and community fire protection facility could be provided in Government Camp.
- In the western portion of the planning unit, a new school and expansion of present facilities will be needed. Schools in the upper Hood River Valley would be maintained at their present capacity.
- Due to increased levels of use and population, additional police protection (state and county) will be required.
- A rest area and information center will be planned in cooperation with the State Highway Division within the westside corridor. A full assessment of location possibilities should be done before final designs are approved and actual site is selected.

Land and Community Classifications

- Very few changes in the existing community and county plans are proposed or necessary; rather the emphasis is on better service areas, maintenance of environmental quality standards and coordination with other public agencies to achieve local and statewide goals.
- In the westside corridor, modified zoning patterns would be needed in the Cherryville-Sleepy Hollow area, Lolo Pass, and along the south and north hillsides bordering the valley floor. To achieve a degree of relative concentration, Government Camp and Welches would be allowed to pursue the higher densities that are indicated for designated commercial and resort housing areas (see planning maps).
- Exclusive farm, scenic forest, general forest, and some limited rural housing zone classifications would be introduced into the upper Hood River Valley on the eastside.

Administration and Public Costs

- Because of increase in public services, i.e., Highway 26, fire protection, sewers, water and schools, this alternative will require an increase in public expenditures and would result in higher property taxes, particularly in areas served.
- There would be a sizable increase in revenues from timber harvesting to the U.S. Treasury and the counties.
- The interagency planning and management process would continue and be more streamlined. A planning council for the Mt. Hood area, representing principal agencies with jurisdictional authority, will be appointed to monitor and advise on plan implementation.

Projections of Economic Activity

Projecting a population of 16,000 to 29,000 presupposes continued recreation home development, private sector recreation facilities and, most importantly, continued expansion of recreation facilities. Expansion, through permittee use, refers to the level of use, not necessarily acreage. If expansion of permits is clearly understood to take place, then the following linear projections have some validity (the estimate of commercial activity is a minimum). It may not be possible to achieve the projected population given the existence of control over recreational facilities and the nature of economic inter-dependencies.

Preliminary Estimates of Values of Commercial-Recreation Activity in Mt. Hood Planning Unit ^{1/}

	<u>Commercial-Recreation</u>
Total value (all revenue)	\$26,000,000 to 52,000,000
% of all revenue	85%
Total wage expenditures	13,000,000 to 23,640,000
% of all wages	85%
Total Employment	2,500 to 4,500
% of all labor	75%

Source: Prepared by Mid-Columbia Economic Development District.

^{1/} See summary for comparison of commercial-recreation activity with forestry and agriculture activities.

Figure 13

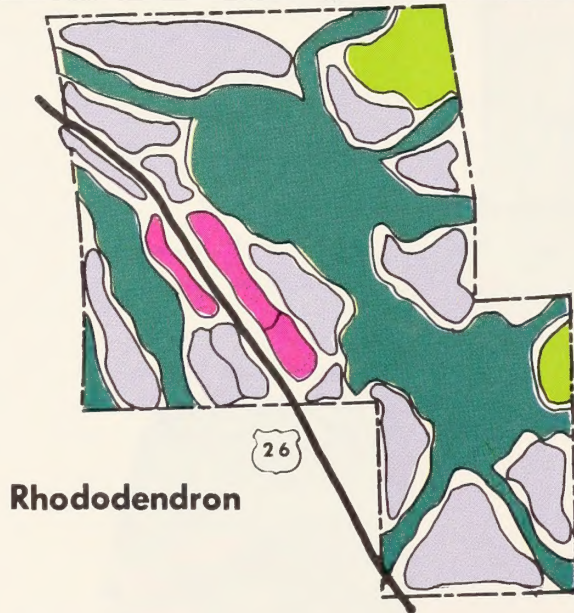
CAPACITIES BY COMMUNITY AND PROPOSED SERVICE AREAS

DESCRIPTION	Density Factor		Potential Units	
	(Units/Acre)	Acres	Low	High
I. Westside				
A. Proposed sanitary areas				
Zigzag Village	4	77	308	308
Rhododendron CBD		20	-	-
Welches - Priority 1				
Low density residential	2-4	107	214	428
Planned resort	4-6	365	1460	2190
Developed recreation		108		(100)
Subtotal			1674	2618
Brightwood - Priority 2				
Timberline Rim	4	168	672	672
Phase Area 1	2-4	333	666	1332
Phase Area 2	2-4	362	724	1448
Subtotal			2062	3452
TOTALS (A)				
Low density residential		1067	2584	4188
Planned resort		365	1460	2190
Developed recreation		108	-	(100)
TOTAL UNITS			4044	6378
Population(@ 3 persons/unit)			12132*	19134*
B. Rhododendron		100	100	200
C. Government Camp		205	-	1080
D. Alder Crk/Sleepy Hollow		1400	190	365
E. Wenme/Zigzag		2560	306	613
F. Lolo Pass		390	-	237
Subtotal (B-F)			1913	2495
TOTAL UNITS			5957	8873
Population			17860	26367
II. Eastside				
A. Parkdale		220	-	580
B. Upper Valley	.1-.2	1700	190	300
TOTAL UNITS			770	880
Population			2300	2600*

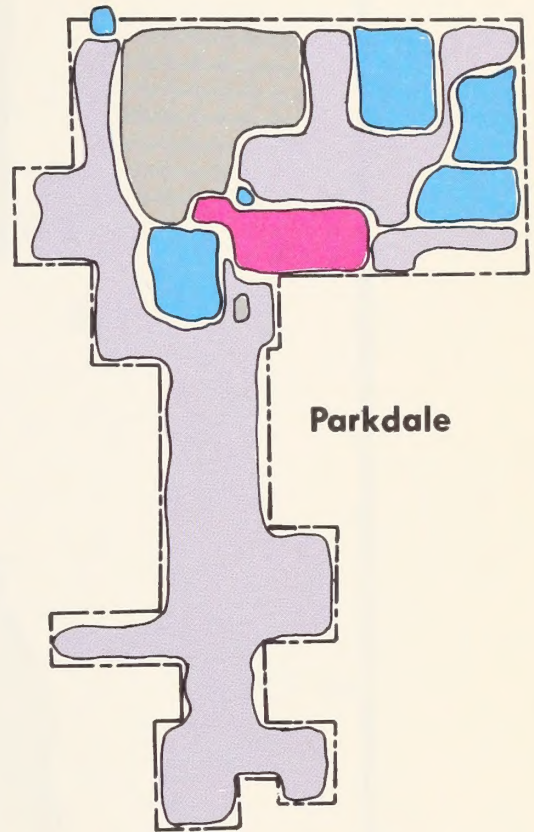
*NOTE: These estimates represent "level 2" of the proposed plan capacity provisions. The alternate "level 1" holds sewer service in Brightwood just to the present Timberline Rim development. Additional housing in the Brightwood area would occur within Timberline Rim and on suitable soils for septic systems (a minimum of 160 acres within the proposed service area). This reduces the community and the overall westside capacity by 1300-2600 units leaving the "level 1" design potential or a total of 14,000-18,000 population.

COMMUNITY LAND USE PROPOSED PLAN

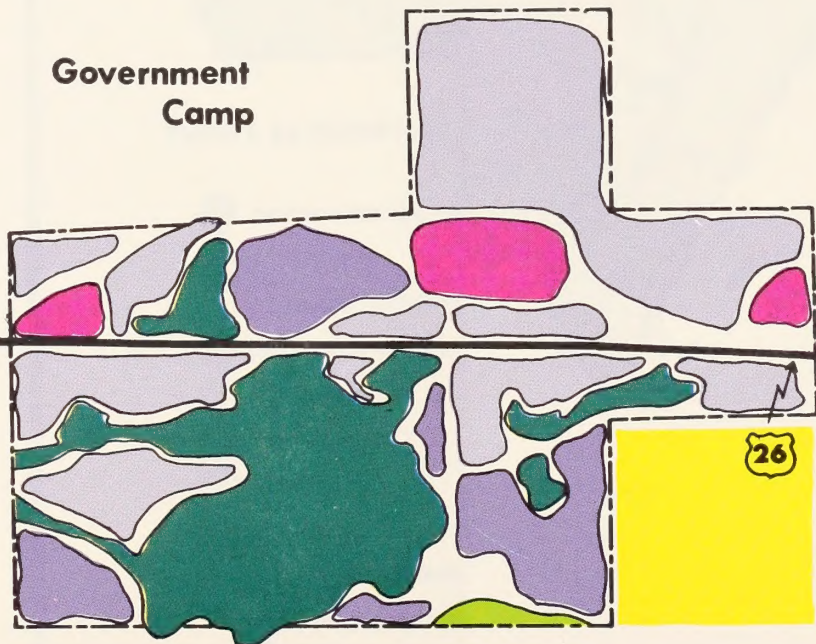
MAP 14



Rhododendron



Parkdale



Government
Camp

- Environmental Protection
- Outdoor Recreation (Proposed plan only)
- Scenic Forest
- Housing**
- Low Density Recreational
- Planned Resort (Proposed & A only)
- Commercial
- Industrial
- Special Site

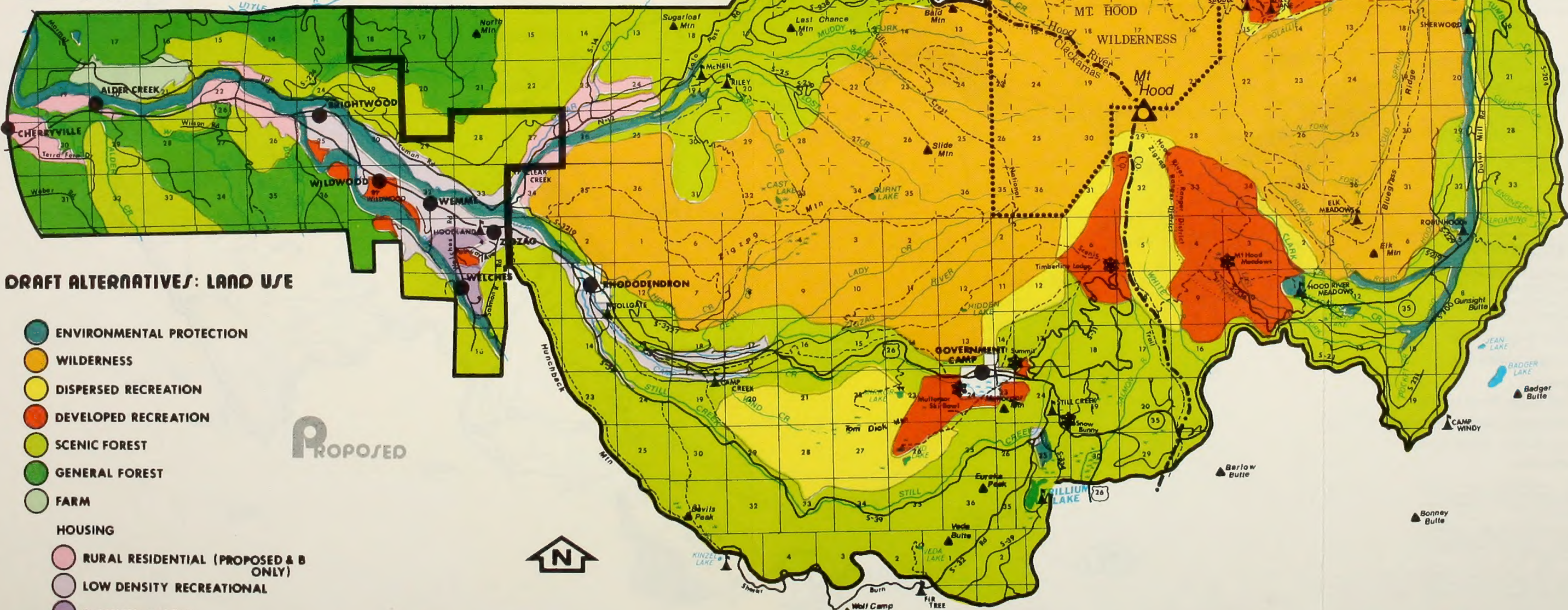


MT. HOOD PLANNING UNIT

MAP 15

- Primary Road
- Secondary Road
- U.S. Highway
- State Highway
- Forest Service Road
- Trail
- Campground
- Picnic Area
- Winter Sports Area

- Boundaries
- Planning Unit
 - Wilderness
 - County
 - National Forest



DRAFT ALTERNATIVES: LAND USE

- ENVIRONMENTAL PROTECTION**
- WILDERNESS**
- DISPERSED RECREATION**
- DEVELOPED RECREATION**
- SCENIC FOREST**
- GENERAL FOREST**
- FARM**
- HOUSING**
- RURAL RESIDENTIAL (PROPOSED & B ONLY)
 - LOW DENSITY RECREATIONAL
 - PLANNED RESORT
 - COMMERCIAL
 - SPECIAL SITE (A & B ONLY)

PROPOSED



0 1 2 3 4 5
miles

R6E

R7E

R8E

R9E

R10E

T15

T25

T35

T45

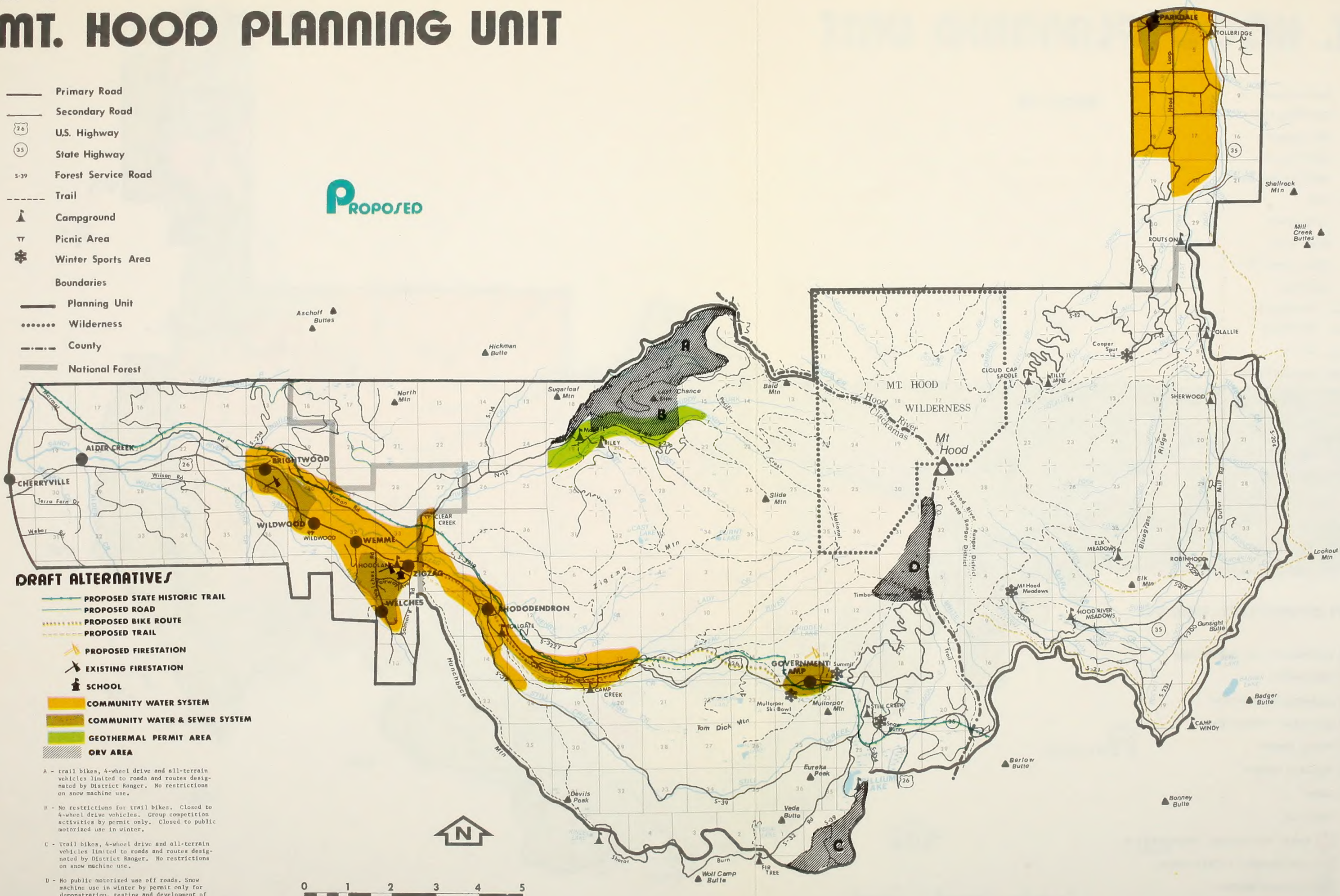
MAP 16

MT. HOOD PLANNING UNIT

- Primary Road
- Secondary Road
- U.S. Highway
- State Highway
- Forest Service Road
- Trail
- Campground
- Picnic Area
- Winter Sports Area

- Boundaries
- Planning Unit
- Wilderness
- County
- National Forest

PROPOSED



DRAFT ALTERNATIVES

- PROPOSED STATE HISTORIC TRAIL
- PROPOSED ROAD
- PROPOSED BIKE ROUTE
- PROPOSED TRAIL
- PROPOSED FIRESTATION
- EXISTING FIRESTATION
- SCHOOL
- COMMUNITY WATER SYSTEM
- COMMUNITY WATER & SEWER SYSTEM
- GEOTHERMAL PERMIT AREA
- ORV AREA

A - trail bikes, 4-wheel drive and all-terrain vehicles limited to roads and routes designated by District Ranger. No restrictions on snow machine use.

B - No restrictions for trail bikes. Closed to 4-wheel drive vehicles. Group competition activities by permit only. Closed to public motorized use in winter.

C - Trail bikes, 4-wheel drive and all-terrain vehicles limited to roads and routes designated by District Ranger. No restrictions on snow machine use.

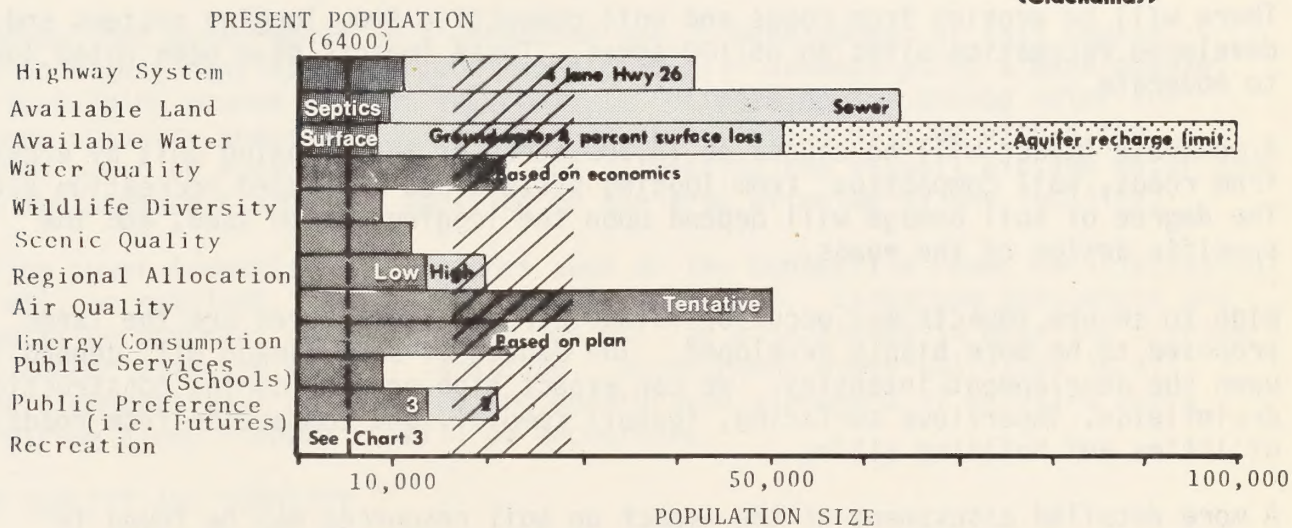
D - No public motorized use off roads. Snow machine use in winter by permit only for demonstration, testing and development of snow vehicles.

All other areas closed to off-road vehicle use.

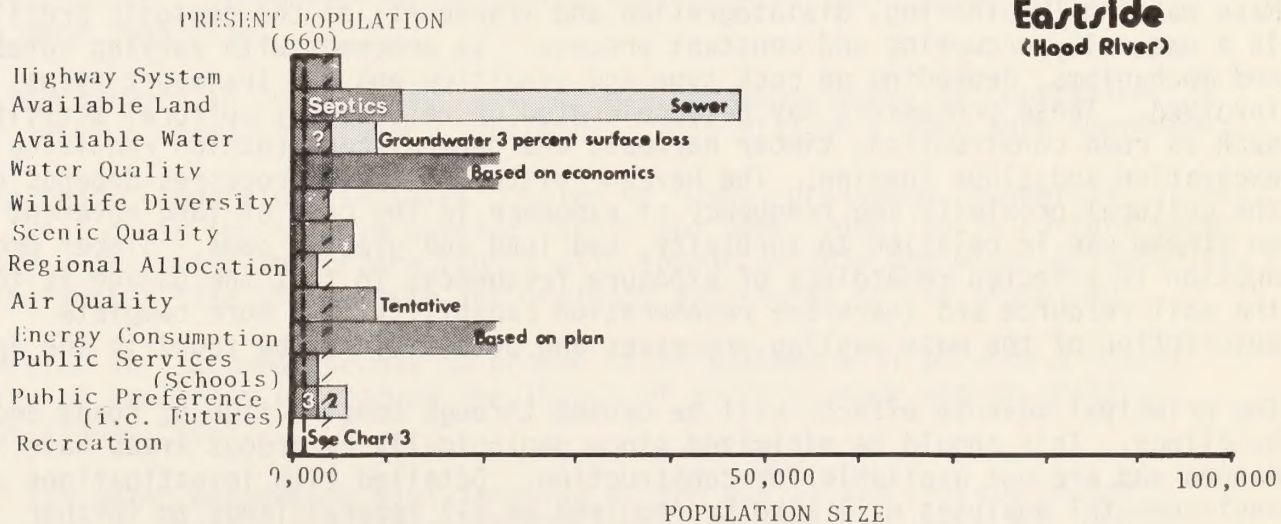


ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

Westside (Clackamas)



Eastside (Hood River)



Implementation of any management direction has environmental impacts. The proposed plan has been designed to realize the favorable while minimizing the adverse effects. The major tools used in minimizing the impacts were the land suitability analysis, environmental capacity analysis, and public response to the land use concepts of the "Futures" publication.

SOILS

The impact on soil resources will be lowest on 63,600 acres with slight to moderate erosion from trail and campsite development. There will be some erosion from farm operations and soils compaction around stock watering areas.

There will be erosion from roads and soil compaction from logging systems and developed recreation sites on 65,100 acres. These impacts have been rated low to moderate.

A moderate impact will be caused on 13,300 acres of the planning unit by erosion from roads, soil compaction from logging systems and developed recreation sites. The degree of soil damage will depend upon the logging system used, and the specific design of the roads.

High to severe impacts may occur on 13,300 acres. These acres are the lands proposed to be more highly developed. The degree of soil damage will depend upon the development intensity. We can expect high erosion during construction, drainfields, impervious surfacing, topsoil removal, and compaction from roads, utilities and building siting.

A more detailed assessment of the impact on soil resources may be found in the Appendix.

GEOLOGY, MINERALS AND ENERGY

Mass wasting (weathering, disintegration and transport) of the geologic profile is a naturally occurring and constant process. It proceeds with varying rates and mechanisms, depending on rock type and condition and the transport agent involved. These processes may be accelerated or retarded by cultural activities such as road construction, timber harvest, and general construction requiring excavation and slope loading. The hazard related to these processes depends on the cultural proximity and frequency of exposure in the case of land movement and on stream use in relation to turbidity, bed load and glacial dams. Timber production is affected regardless of exposure frequency, in that the damage is to the soil resource and therefore regeneration capability. (A more complete description of the mass wasting processes and potential may be found in the Appendix)

The principal adverse effects will be caused through construction of roads and buildings. This should be minimized since geologically hazardous areas have been mapped and are not available for construction. Detailed site investigations and environmental analyses will also be required on all federal lands to further mitigate the possibility of geologic movement.

There should be no environmental effects from mining of locatable minerals, since there are very few within the planning unit. There are, however, several rock pits and quarries which are in existence and will continue to be used. The impact of aggregate sand and gravel quarry operations affect primarily visual resources. Excavation sites are subject to performance standards and reclamation plans will be required.

The development of potential geothermal energy sites within the Mt. Hood Planning Unit will have significant impact on the area should it occur. These impacts will be in the area of visual resources, construction materials requirements, land utilization and industrial population. Major developments can require large blocks of land for facilities construction, power or fluid transmission lines and water treatment facilities. These facilities vary depending on whether the resource will sustain power generation or thermal water for heating only. This distinction cannot be made until exploration drilling fully evaluates the type of heat source and geohydrolic system.

Geothermal hot water would be a permitted use. Development of this source would be highly regulated and conditional to: 1) demonstrating a developable, self-sustaining source without environmental effects on the ground water and adjacent activity areas or communities; 2) transmission will be within the existing power or roadway corridors; and 3) meeting the visual, air and water and noise performance standards, applying to the area affected by the facility.

Existing power transmission corridors such as the Bonneville Power Administration line will be retained. No new corridors are planned. Landscape management and revegetation programs by public agencies will be established to make the corridors blend better with the natural landscape. Underground power utilities in all new developments will be required and underground placement of existing overhead wiring along Highway 26 will be encouraged.

WATER QUALITY AND QUANTITY

The proposed alternative will include some increase in harvest levels. The sediment yields will not cause significant increases in water turbidity. Streams containing high percentages of glacial flows will continue to be unsuited for domestic water. Streamside management practices will limit temperature change to no more than 2° F.

Some improvement in ground water quality will be experienced by conversions in sewer service areas to tertiary treatment. This will be a long term improvement.

The increased impervious surfaces created by homes, driveways, commercial areas, etc., will cause increases in surface runoff and some reduction in surface water quality. Increases in surface runoff will appear in only the minor tributaries, causing larger size of culverts and drainage structures to be installed.

Conversion in Clackamas County to ground water systems will provide a higher quality of raw water and reduce the impact of surface water use or critical summer stream flows.

Costs for water management will increase in the public and private sectors. The timber production will increase 22% beyond the present level and housing will increase about four times the current level. These increases will cause a geometric increase in costs for water quality management.

Fire, floods and land flows are natural disasters which affect water quality. None of the alternatives will affect the major flooding potential. The proposed action will affect fuels treatment and reduce fire hazard, thereby reducing the risk of a major fire and potential for subsequent flooding. Access provided the timber producing areas will ultimately reduce the debris damage potential associated with floods.

Minor and temporary nutrient increases have been recorded in the Fox Creek research watershed to the north of the planning unit. Similar increases could be expected with the planned level of silvicultural activities. The increases, although detectable through intensive research, are expected to be negligible and non-significant in meeting water quality standards. With respect to areas of urbanization, the potential for increased chemical introduction to streams is great and localized problems of algae in stream may result.

AIR QUALITY

The proposed action will cause increased noise levels. There will be temporary air quality degradation from increases in smoke and dust levels from burning and log hauling and road construction activities. These impacts will be minimized by requiring that management activities maintain air quality standards equal to EPA level 1.

Auto and furnace emissions could range from 5085 to 6086 tons per year. This represents an increase of 205% over the existing situation. (See Appendix for additional details)

VISUAL RESOURCES

Under the proposed plan, 140,300 acres (88% of the lands in the planning unit) will be managed to meet the highest three visual quality objectives of preservation, retention, and partial retention.* This represents an increase of 26% over the lands currently managed for preservation, retention and partial retention. The major impacts on the visual resources will come from activities such as timber harvesting, road construction, housing and commercial and industrial developments. These impacts will be alleviated in the proposed plan by the confining of commercial industrial facilities to existing centers, the prohibition of strip commercial development on Highway 26 and 35, establishment and maintenance of tree cutting standards in designated housing areas, the requirement of performance standards in reclamation plans in rock quarry sites, landscape management and revegetation programs on power transmission corridors, etc. Under this alternative, scenic quality would be upgraded as compared to the present direction or Alternative A.

A more detailed comparison of the impacts of the proposed plan in alternatives on the visual resources may be found in the Summary Impacts section of this environmental impact statement.

FIRE MANAGEMENT

The proposed plan foresees an increase over present levels of residential housing and commercial buildings. This will bring a proportional increase in fire risk which will be greater than Alternative B and less than Alternative A. Vigorous application of fire safety measures could reduce this effect. In addition,

* See Glossary

by concentrating growth, better fire protection can be provided to homes at a lower cost. There is little question that more fires will occur, but more effective fire control will be available.

The inherent risks and hazards connected with timber harvesting also will be a compromise between the other two alternatives (greater than B, less than A) and roughly proportional to the amount of land allocated to logging activity. The proposed plan will keep fuels to a moderate or low level in about 102,000 acres of the planning unit and permit prescribed burning in areas other than those designated for wilderness study. This action will avoid extreme fuels buildup.

Fire danger due to recreational use will be lower than Alternative B, since fewer acres will be designated for wilderness and dispersed area activity. Similarly, it will be appreciably higher than Alternative A. Fire prevention activities will be counted on to reduce the occurrence of fire starts.

The additional roads and fire control facilities (heliports, pump chances, etc.) scattered throughout the planning unit will improve the opportunity to control fires quickly.

WILDLIFE

The most critical impact on wildlife is the continuing increase in the human population. Although the proposed plan recommends moderate increase in population density (see Environmental Capacity Analysis, page ____), a considerable loss of wildlife diversity should be anticipated. Those wildlife species which are less able to adapt to humans and human-caused harassment and environmental change will be the first to disappear. (Horn, K. 1975b) Resulting from the significant increase in people taking advantage of developed and dispersed recreational opportunities, an increase in wildlife harassment and associated habitat damage is anticipated. (Horn, K. 1975a) Both primary and secondary impacts will increase. Wildlife harassment by man and harassment by dogs will also increase as dogs are taken into the planning unit with their masters. This increase in recreational pressure will also result in trampling and damage of habitat along popular trails, riparian areas, viewing points, etc. Impacts resulting from facility development and people increase in the outlying biome will be especially severe. Intensive timber management in the commercial forest lands will result in the loss of snag habitat which will detrimentally impact approximately 62 species of animals. This impact will be somewhat alleviated, on the national forest through the implementation of the USFS Region Snag Habitat Policy.

Poaching and dogs will be controlled through local community efforts and assistance, educational programs, and enforcement of existing regulations by state police and county sheriff's office.

Winter range would be maintained in several lower elevation areas with an active management program for deer and elk. This will result in the closure of some forest roads during winter months to reduce big game harassment.

Approximately 3,600 acres will be set aside for environmental protection for wildlife and fisheries as well as conservation and scenic recreation under the proposed plan.

FISHERIES

The potential for increased residences within the planning unit and increased visitors will increase the total fish catch of trout and anadromous fish and cause some loss in the quality of the fishing experience for native fish.

Point pollution* would be reduced through establishment of improved service areas and control system, but non-point* pollution will increase. This increase, however, should not be sufficient to cause measurable decreases in fish habitat. The fish habitat should be maintained in its present quality with possibility of improvement. This will occur through flood plain protection and provision for public exchange or purchase of lands in the flood plain, concentration of growth and improved sanitary systems, the use of ground water rather than continued drawdown of surface waters, streamside management programs on public lands, and policies for drainage way maintenance.

The provision for added fish stocking access and fish rearing areas will provide an opportunity to increase the productive capacity of streams in the planning unit.

AGRICULTURE

The proposed alternatives should have little impact upon the amount of agricultural production in Hood River County. The Clackamas county lands now being used for agriculture are also designated as farm lands. This alternative retains the agricultural lands in farming, and the one processing industry at Parkdale in industrial; therefore, little impact is foreseen on agricultural production.

The impact upon the irrigation systems may be more substantial, particularly if the activities in watersheds produce sedimentation. Additional maintenance costs will be incurred by the East Fork Irrigation District which obtains its water from the East Fork of Hood River. The Middle Fork Irrigation District, which obtains its water from watersheds outside the Planning Unit, will not be affected by these alternatives. Land activities which contribute the most sedimentation are residential construction, road building and timber harvesting.

TIMBER MANAGEMENT

The proposed plan will keep 51,100 acres of the forest and non-forest land in an unroaded condition. There also will be 65,100 acres in designated scenic forest. 9000 acres in the Still Creek drainage and forests east of Hood River are extremely sensitive. Special logging systems may be used here. The steep slopes, inaccessibility and scenic quality objectives make access into this area by roads difficult.

The harvest level under this action would range from 27,769 MBF under the present level of management to 47,289 MBF under more intensive management. The basic change to intensive management will be to control the number of trees growing on a site to achieve maximum growth and vigor of trees.

* See Glossary

The harvest levels by ownership could be as follows:

<u>Management Unit</u>	<u>Current MBF</u>	<u>Intensive MBF</u>
Mt. Hood National Forest	17,223	29,333
Bureau of Land Management	1,537	2,615
State of Oregon	264	449
Hood River County	1,030	1,754
Clackamas County	536	913
Private Land - HR County	948	1,615
Private Land - CL County	6,231	10,610
Total Planning Unit	27,769	47,289

PROPOSED PLAN - TIMBER

	<u>Units</u>	<u>Federal</u>	<u>State-County</u>	<u>Private</u>
Comm. Forest	Acres	45,535	4,440	17,425
Present Yield	Mbf/yr	18,760	1,830	7,179
Timber Value	\$/yr	2,934,447	283,321	1,111,453
County Tax Rtrn	\$/yr	800,620	212,491	112,217
Direct Jobs	#/empls	106	10	40
Payroll Values	\$/yr	5,406,000	510,000	2,040,000
High Yield	Mbf/yr	31,948	3,116	12,225
Timber Value	\$/yr	4,997,313	482,419	1,892,675
County Tax Rtrn	\$/ur	1,363,323	361,814	112,217
Direct Jobs	#/empls	180	18	69
Payroll Values	\$/yr	9,180,000	918,000	3,519,000

The forests within the Zigzag Mountain and the Mt. Hood Wilderness Study Areas are in a holding condition pending the outcome of the Study. The areas have been withdrawn from the commercial forest base.

The annual harvest estimates are based on managed yield tables and are valid for comparative purposes only. These estimates should not be construed as being an annual harvest quota. This comparison reflects the potential production of the area based on site potential and current technology.

WILDERNESS AND PRIMITIVE RECREATION

The proposed plan has two areas which are designated for Wilderness Study by the Forest Service. The designated areas are Zigzag Mountain and Mt. Hood which total 32,500 acres. In designated wilderness, trails will be provided to protect wilderness values. Those trails in conflict will be abandoned.

Since the areas in wilderness study will not have any timber harvesting conducted, there is a potential impact on this wood products industry. This will be somewhat mitigated, however, by the values to be obtained through increased tourism and recreational revenues generated by people seeking wilderness type experience.

Outside the designated wilderness existing trails will be maintained and additional trails provided. The trailhead for the Ramona Falls Trail will be moved back to the end of the existing pavement in order to reduce the number of visitors and resultant impact at the Ramona Falls Area.

RECREATION

All of the acreage of the planning unit is essentially available for some form of recreation activity. Each of these recreational activities have some form of environmental impact. Perhaps the greatest impact will be caused through the installation of urban-type recreation facilities because of the extensive facilities required. Under the proposed plan, approximately 7,100 acres are designated for concentrated recreation and skiing, and will allow developed recreation facilities and accommodations. This includes the potential expansion of several ski areas. Through adherence to visual quality objectives, the visual impacts of these developments on the land are expected to be minimized.

The quality of recreation experiences based on expected population user levels would be best for snow activities, fishing, driving for pleasure, resort activities, such as golf, and picnicking. A slightly lower quality could be expected for activities such as skiing, hunting, camping, scenic viewing, water sports and mountaineering.

The highest amount of visitor day use to be expected would occur under activities such as snowplay, driving for pleasure, golfing and picnicking. Lower increases in visitor day use could be expected for activities such as skiing, fishing, hunting, camping, scenic viewing, water sports, mountaineering and resort activities.

Because of the moderate increases in population user levels expected under the proposed plan, the quality recreation experiences will generally be very good.

The proposed plan will offer recreation opportunities for the greatest diversity of people from all economic classes. Public benefits will be maximized and the opportunities for urban access to benefits of outdoor recreation will be great, with quality reasonably sustained.

Because the proposed plan encourages use where it can be accommodated, it has the highest administrative efficiency.

For more complete description and comparison of the recreation assessment, please refer to the Summary Impacts section of this environmental impact statement.

TRANSPORTATION - STATE

Under the proposed plan, the changes in the state highway system would create some impacts. Under this alternative there could be three or four lanes created in the Brightwood-Zigzag section, which would affect the north side of the Dwyer corridor by the removal of large trees adjacent to the existing highway. This would have a significant effect on the highway users' visual experience. The expansion of the remaining two lane units of the Zigzag-Rhododendron section would probably not displace residences or business, due to existing setbacks, but might require revision of the local circulation patterns and access points of these population centers in order to reduce congestion on the main highway. Some improvement, possibly the addition of a passing lane,

would be necessary in the Rhododendron-Timberline highway section, requiring the removal of old growth timber.

Prior to approval of the Highway 26 modification, alternative designs will be proposed with an environmental analysis of each. The design best meeting the objectives would be the plan recommended.

FOREST SERVICE ROADS AND TRAILS

There are no major Forest Service roads proposed under this plan. The approximately six miles of roads which are proposed are primarily extensions of existing roads, and in most cases are short sections needed for completion of an existing road system. Care has been taken in laying out the roads such that they are in terrain and soil types which are suitable for road building. Approximately 52 miles of trails are to be built under this proposal. This includes an approximately 10 mile long bicycle trail and a low elevation hiking trail, as well as other multi-purpose trails. Trails will be signed to avoid user conflicts.

The primary biological impact from additional roads and trails would be one of increasing foot and vehicular traffic through areas which were previously less impacted. This could produce wildlife harassment and its resultant reduction in wildlife diversity, the potential detrimental impact of foot traffic on vegetation, soil compaction, blowing dust, some temporary noise and possible soil movement. Social benefits would occur from the development of roads and trails. The scenic values may be improved through the revegetation and reshaping of existing and proposed new roads, and additional trails will provide a means for dispersing the recreation use over more areas, as well as providing additional recreation facilities for an increasing need.

ENERGY CONSUMPTION

Under the Proposed Plan gasoline usage and domestic consumption of home fuels could triple compared with the existing usage. However, energy efficient construction will be encouraged and developments will be more concentrated, which will minimize the overall consumptive demands. The relative increase in fuel consumption under the proposed plan will be potentially less than under the present direction of Alternative A. A detailed description of fuel consumption is in the Appendix.

The relative efficiency of fuels should be improved by concentration of development in established communities. This will make available more efficient transportation, encourage non-fuel transportation (foot and bike) and mass transit from centers. The availability of geothermal heat in the unit could change the area from an energy consumer to an energy producer.

HISTORIC AND ARCHAEOLOGICAL SITES

The proposed plan will not affect, either favorably or adversely, those sites now on the National Register of Historic Places, recommended additions or potential sites. All projects resulting from this plan will be evaluated for their effects on identified sites or areas in consultation with the State Historic Preservation Officer and, if necessary, the Advisory Council on Historic Preservation pursuant

RECREATION

All of the acreage of the planning unit is essentially available for some form of recreation activity. Each of these recreational activities have some form of environmental impact. Perhaps the greatest impact will be caused through the installation of urban-type recreation facilities because of the extensive facilities required. Under the proposed plan, approximately 7,100 acres are designated for concentrated recreation and skiing, and will allow developed recreation facilities and accommodations. This includes the potential expansion of several ski areas. Through adherence to visual quality objectives, the visual impacts of these developments on the land are expected to be minimized.

The quality of recreation experiences based on expected population user levels would be best for snow activities, fishing, driving for pleasure, resort activities, such as golf, and picnicking. A slightly lower quality could be expected for activities such as skiing, hunting, camping, scenic viewing, water sports and mountaineering.

The highest amount of visitor day use to be expected would occur under activities such as snowplay, driving for pleasure, golfing and picnicking. Lower increases in visitor day use could be expected for activities such as skiing, fishing, hunting, camping, scenic viewing, water sports, mountaineering and resort activities.

Because of the moderate increases in population user levels expected under the proposed plan, the quality recreation experiences will generally be very good.

The proposed plan will offer recreation opportunities for the greatest diversity of people from all economic classes. Public benefits will be maximized and the opportunities for urban access to benefits of outdoor recreation will be great, with quality reasonably sustained.

Because the proposed plan encourages use where it can be accommodated, it has the highest administrative efficiency.

For more complete description and comparison of the recreation assessment, please refer to the Summary Impacts section of this environmental impact statement.

TRANSPORTATION - STATE

Under the proposed plan, the changes in the state highway system would create some impacts. Under this alternative there could be three or four lanes created in the Brightwood-Zigzag section, which would affect the north side of the Dwyer corridor by the removal of large trees adjacent to the existing highway. This would have a significant effect on the highway users' visual experience. The expansion of the remaining two lane units of the Zigzag-Rhododendron section would probably not displace residences or business, due to existing setbacks, but might require revision of the local circulation patterns and access points of these population centers in order to reduce congestion on the main highway. Some improvement, possibly the addition of a passing lane,

would be necessary in the Rhododendron-Timberline highway section, requiring the removal of old growth timber.

Prior to approval of the Highway 26 modification, alternative designs will be proposed with an environmental analysis of each. The design best meeting the objectives would be the plan recommended.

FOREST SERVICE ROADS AND TRAILS

There are no major Forest Service roads proposed under this plan. The approximately six miles of roads which are proposed are primarily extensions of existing roads, and in most cases are short sections needed for completion of an existing road system. Care has been taken in laying out the roads such that they are in terrain and soil types which are suitable for road building. Approximately 52 miles of trails are to be built under this proposal. This includes an approximately 10 mile long bicycle trail and a low elevation hiking trail, as well as other multi-purpose trails. Trails will be signed to avoid user conflicts.

The primary biological impact from additional roads and trails would be one of increasing foot and vehicular traffic through areas which were previously less impacted. This could produce wildlife harassment and its resultant reduction in wildlife diversity, the potential detrimental impact of foot traffic on vegetation, soil compaction, blowing dust, some temporary noise and possible soil movement. Social benefits would occur from the development of roads and trails. The scenic values may be improved through the revegetation and reshaping of existing and proposed new roads, and additional trails will provide a means for dispersing the recreation use over more areas, as well as providing additional recreation facilities for an increasing need.

ENERGY CONSUMPTION

Under the Proposed Plan gasoline usage and domestic consumption of home fuels could triple compared with the existing usage. However, energy efficient construction will be encouraged and developments will be more concentrated, which will minimize the overall consumptive demands. The relative increase in fuel consumption under the proposed plan will be potentially less than under the present direction of Alternative A. A detailed description of fuel consumption is in the Appendix.

The relative efficiency of fuels should be improved by concentration of development in established communities. This will make available more efficient transportation, encourage non-fuel transportation (foot and bike) and mass transit from centers. The availability of geothermal heat in the unit could change the area from an energy consumer to an energy producer.

HISTORIC AND ARCHAEOLOGICAL SITES

The proposed plan will not affect, either favorably or adversely, those sites now on the National Register of Historic Places, recommended additions or potential sites. All projects resulting from this plan will be evaluated for their effects on identified sites or areas in consultation with the State Historic Preservation Officer and, if necessary, the Advisory Council on Historic Preservation pursuant

to "Procedures for the Protection of Historic and Cultural Properties" (36 CFR, Part 800). The proposed plan maintains the opportunity for discovery of additional sites through reconnaissance and/or intensive survey as part of project plans.

In compliance with Section 2 of Executive Order 11593, the plan will not result in the transfer, sale, demolition or substantial alteration of lands seemingly with characteristics for future nomination to the National Register of Historic Places.

In compliance with Section 101 (b)(4) of the National Environmental Policy Act and Section 1 (3) of Executive Order 11593, the proposed plan will not affect, either favorably or adversely, the preservation and enhancement of nonfederally owned districts, sites, buildings, structures and objects of historical, archaeological, architectural or cultural significance. The Clackamas County Zoning Ordinance for Recreational-Residential (R-R) District, Section 22, states that effects of historic properties will be determined and evaluated as a part of each major development plan within this zone.

SEWERAGE

Construction of sewage treatment facilities to serve the Mt. Hood Land Use Plan will have an impact on the environment of the study area. The land required to accommodate treatment components and facilities will be permanently set aside as a plant site and will need to be fenced to limit public access. In the instance where land disposal will also be required to conform with the zero effluent discharge standard, additional acreage will have to be set aside. Land used for spray irrigation of effluents could have dual uses such as pasture land or timber growing in addition to waste disposal. The land would have to be under the immediate control of the sewerage authority, although outright ownership would not be necessary. Treatment plants may become a dominant feature in the landscape unless designed with generally a low profile and screened. The effect of these facilities upon the land-based ecosystem will be permanent, and a change in the present system can be expected. The long term impact of the treatment facilities will be that the land use will be dictated for the life of the plant. The continual use of the plant site will be necessary until it is proven feasible to abandon its use in favor of a more efficient facility. At that time the land could revert back to its previous use. Land used for effluent disposal will not be subject to quite the same impact, in that it will not have the permanent structures built upon it. This will enable it to more easily revert to its natural state when abandoned.

Construction of irrigation fills which may be proposed may cause some influence upon the ground water tables of the area, in that the water that does not evaporate at the time of application or that is not transpired from the vegetation, will percolate downward and join the ground water. By carefully locating these irrigation fields in proper soil conditions, these affects can be alleviated.

The treatment of sewage always results in generation of quantities of solid wastes and sludges. These sludge solids will be continuously produced in direct proportion to the population being served. Treatment and stabilization of the organic sludges will be a part of any sewage treatment plant. Proper disposal sites will be selected for the disposal of sludge.

The construction of sewage treatment facilities involves all of the adversities of clearing, grading, noise and inconvenience. These are, for the most part, short-term problems. Plants of the size being considered will be built in about a year's time. Natural site drainage will have to be maintained throughout the construction. Since the site chosen will be out of the flood plain, no extensive erosion will be anticipated either during or after construction. Unprotected land may erode during construction but this can be minimized with proper drainage control. Conversely, dust during construction will be a problem also, but this will be limited to the construction site and it should not cause too much nuisance for the adjacent areas. Noise during construction will have to be tolerated.

In all areas not served by sewers, on-site sewage disposal methods will meet the Department of Environmental Quality standards.

For more detailed comparison of the effects of the proposed plan, please refer to Summary Effects section of the EIS as well as the Appendix.

DEVELOPMENT AND GROWTH

The proposed plan provides for a level of residential growth 2.3 to 4.1 times the current population (seasonal and year-around). A number of environmental and social components would be substantially impacted if this growth occurs. Those most significant include: soil, through disturbance and coverage; water, by increasing domestic consumption and the amount of storm runoff and sewage effluent; vegetation, by cutting and removal; wildlife, through increased harassment and disturbance of natural habitat; visual quality, by intrusion in scenic area; recreation, by increasing demand for facilities; transportation, by increasing the need for new roads and highway expansion or improvement; sewer, water supply, waste disposal, and fire protection, by creating new, expanded demands for these essential services. In addition, the economy would be affected through an increase in jobs, particularly in the construction and retail commercial sectors. Public and private investment costs would, however, also climb, with direct capital and operating expenditures to service the proposed plan estimated either at \$28 to \$33 million ("level #1") or \$68 to \$82 million ("level #2"). These levels of growth would also affect the present communities through increased automobile congestion, criminal activity, noise, and possible loss of "small mountain community" atmosphere as densities and neighboring land use patterns change.

Both "level 1" and "level 2" of the proposed plan provide for enough growth to meet Year 2000 expectations from the standpoint of regionwide housing and economic prospects. "Level 2", in fact, is at least 40% over and beyond the projected high. Neither would be exclusionary in terms of housing opportunity.

The growth pattern, in general, would be relatively concentrated and efficient. Intensification would occur only in those areas with known problems or substantially committed to development (with the possible exception of the Brightwood area, in which case "level 2" of the proposed plan will have to stand on its own in terms of need and compatibility through the public decision process). Most of the existing rural-forest areas and all suitable farm land would be retained. In addition, an overall resource allocation program would be established and balanced to serve multiple interests. See summary for more quantitative display of the effects of growth and development under the proposed plan.

Under the Proposed Plan, the population would be planned to increase from the estimated 7,060 to a range of 16,000 to 29,000. This will undoubtedly generate corresponding increases in commercial activity. Activity increases will be more than proportional to population increase. The exact level of economic activity will depend on the ratio of permanent to seasonal population and on expenditure patterns of the local population and of visitors. Economies of scale will permit capturing of additional revenues as the permanent population expands. Consequently, projections based on current economic activity values will be estimates of minimum value of future activity. They are also based on current dollars and do not reflect the effect of inflation in future years. Projects indicate the growing relative economic importance of the commercial-recreation sector compared to agricultural and wood products activities.

Agriculture is limited by land constraints and wood products by timber acreage committed to harvest. Growth in these sectors is limited to increases in yield related to intensive management practices. Growth in commercial-recreation activity is subject to different constraints which pose separate regional and sectoral influences on demographic settlement. The sum of these influences determines total labor demand and total value of the economic products.

Agriculture is not significantly affected under this plan. Without outside investment, incremental residential growth in Parkdale will not affect total land available for agriculture. Production methods will continue to utilize labor intensive harvesting techniques. Actual revenue will fluctuate depending on weather conditions. Tree density on existing orchards will increase slightly over time.

Timber harvest values and employment would reflect possible changes in intensive management to increase yield. The economic benefits of increases in timber yield may not be directly realized in the planning unit due to the fact that most wood processing industries are located outside the unit. However, some favorable affects may occur in terms of additional employment.

Future growth will be determined by seasonal recreation home development, resident population size and tourism demand and visitor use activity.

Seasonal recreational home development patterns can be determined with reasonable accuracy. For developed recreation facilities on public land, deficiencies in data and uncertainties about future permitted use place projected use levels in doubt. Anticipated use and permitted use at developed sites and in undeveloped areas are major controlling factors over future economic activity. Visitor use determines commercial activity both on-site and in the adjacent population and commercial services corridor along Highway 26. A large portion of the resident population in the Clackamas County part of the Planning Unit derives its means of subsistence (wages & income) and thus purpose for residing in the area from the recreational use base. We emphasize the base is composed of both developed and undeveloped sites on public land, summer home development and private sector recreation facilities (primarily Bowman's).

*Assumptions for the assessment are in the Appendix

ALTERNATIVE A

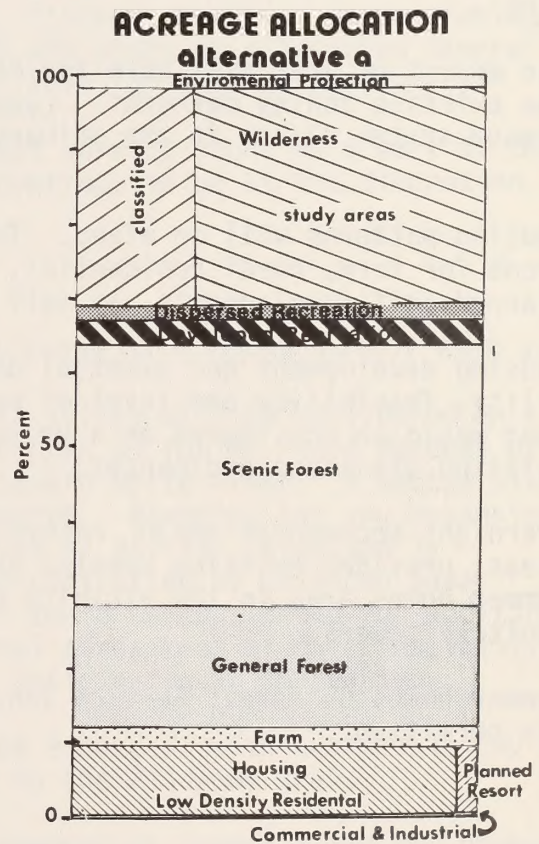
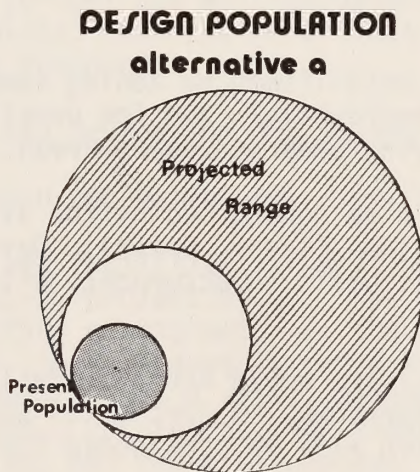
Perspective

The alternative to the proposed plan assumes a continuation of established planning directions and existing zoning patterns. Interagency coordination would be more limited. All suitable lands now designated for development would be built upon with the level of development controlled by available service. Existing forest farmland areas would remain in production where acknowledged in present plans.

Assuming an urbanized services level, Highway 26 would have to be an expanded four lane facility from Brightwood to Rhododendron even though this may conflict with existing policies and scenic objectives.

There are no additional wilderness study areas proposed beyond those currently designated. Based on present zoning allocations and refined suitability data, the population provisions under this alternative could range up to 60,000 residents (seasonal and permanent), depending on available sewer services.

Many elements of environmental capacity could be significantly compromised.



Agriculture and Forestry

- Agriculture area allocation is 3,500 acres. This will leave farm land in the westside corridor available for residential use. Designated agricultural lands in Hood River County remain constant. Areas now being used for agriculture in Clackamas County will be available for housing construction.
- Available land for forest production will be 80,500 acres. These areas will be available for full-yield timber production with the exception of recreation travel corridors, hillsides visible to community areas, streamside corridors and wetland buffers. A full range of silvicultural practices will be used, designed to keep sites productive and trees in a healthy condition. Soil erosion and slippage is to be avoided while meeting seeding standards and protective habitat diversity for wildlife.
- Some of the area within the private sector which is now being managed for timber production will be available for conversion to housing. However, within the public land sector, all those areas presently available for timber harvest will remain available.
- There would be little opportunity for landscape character retention (scenic quality) west of the Welches area.

Housing

- The amount of area available for housing is 12,300 acres and is reflected by the existing zoning patterns. Land suitability criteria for building and sewage system siting is the primary governing constraint.
- Housing patterns will be mixed. This would be established by zoning some areas for farm, rural residential, recreation residential, and low density planned unit developments, as well as intensifying present resort areas.
- Housing development and eventual densities would be controlled by the availability, feasibility and level of permitted services (sewer, water). Development would be considered on a project-by-project basis in accordance with existing plans and ordinances.
- Overnight accommodations at resort housing densities would occur in designated areas, provided existing service problems are overcome. A portion of the summer homes area in the vicinity of Rhododendron will be considered for sanitary sewers.
- Summer homes on Forest Service lands will be retained. No additional sites are permitted.

Commercial and Industrial

- Community service facilities would be expanded to serve increased residential areas, along with the possibility of developing new commercial centers as presently designated in existing plans.
- Pressure for additional strip development along Highway 26 would increase, but the objective of preventing such an occurrence remains in effect.
- Industrial uses in the Parkdale area will continue.

Wilderness and Primitive Recreation

- Zigzag Mountain and Mt. Hood Wilderness Study Areas will provide opportunities for addition of up to 33,500 acres to the existing Mt. Hood Wilderness (14,000 acres). A permit system to regulate use within the present Mt. Hood Wilderness could be necessary. Without this, some loss of fragile alpine areas will occur.
- In designated wilderness, trails will be provided to protect wilderness values. Those in conflict are to be abandoned.
- Outside the designated wilderness, existing trails will be maintained and additional trails provided. Approximately 4,500 acres will be designated for primitive or dispersed outdoor recreation activity, to include hiking in an unaltered forest setting.
- Additional areas with more convenient public access would be provided for such activities as primitive car camping, hiking, fishing, hunting, berry picking, wood cutting, and roadside viewing. Some 80,800 acres of classified General Forest and Scenic Forest lands would be available for this purpose.
- Areas for ORV use will be determined on Forest Service lands as a part of the ORV policy. ORV use on private lands will continue to be at the discretion of the landowner.

Concentrated Recreation and Skiing

- Developed recreation and downhill ski permit areas have approximately 6800 acres.
- Areas and facilities for golfing and downhill skiing will be considered on a project-by-project basis. New terrain could open up for Mt. Hood Meadows by permitting an expansion of the permit area toward White River. A master plan for Mt. Hood Meadows is currently being prepared. Planning for any expansion will insure that a visual management objective of partial retention is obtained. Future facility expansion will be controlled by balanced base capacity, ski capacity concept. Cooper Spur could be considered for additional ski terrain and expanded facility. Additional assessment of this possibility is needed. No overnight accommodations are anticipated at Cooper Spur.
- The existing Wildwood recreation area will be expanded, with additional day use facilities and trail head/bridge connection to the Wildwood Trail.
- Timberline Lodge will provide overnight accommodation capacity for 250 persons. Downhill skiing will continue with an increase in lift capacity and new summer ski area on Palmer Glacier. A day lodge will be added,

governed by the concept of balanced on-site capacities. The main lodge is to be managed under a stronger historic preservation program than in the past.

Wildlife and Fisheries

- 2,600 acres are recommended for environmental protection purposes.
- A gradual decline in the availability of winter range through demands for other uses will occur, with an increase of harassment from people and dogs. Development, timber harvest and roads would cause an increased alteration of existing wildlife habitat and species composition.
- There would be limited protection of resident trout and anadromous fish populations.
- Establishing a minimum stream flow policy will remain an objective, but would be difficult to achieve as domestic demands for water increase.

Minerals, Energy and Power

- Public lands would continue to be available for energy development. There is a known potential for geothermal development and proposals would be evaluated case-by-case.
- New sites for rock quarries would be by special permits, on public and private lands. Existing rock quarry sites, such as Robinson, White River and Brightwood will continue to be utilized. Performance standards and reclamation plans are required.
- Proposals for new utility corridors would be evaluated case-by-case. Existing power transmission corridors (e.g., Bonneville Power Administration) will be retained, however. No new corridors are planned. Existing rights-of-way would be expanded as needed.
- Overall energy consumption would be at its highest level due to expanded development, lack of development concentration and higher traffic volumes. However, energy efficient construction will be encouraged and developments will be concentrated.

Transportation

- Highway 26 would be changed to a four lane from Brightwood to Timberline Road, and a three lane highway from Timberline Road to the intersection of Highway 35. It is recognized that even with this design there will be some periods of overload. Highway 35's present design capability, with the exception of a few major intersections, may not be affected.
- Protecting and enhancing the scenic character of the highway corridor will be based on existing plans and implementation through individual project review.

- Increased parking capacity at ski and resort would be reviewed on a project-by-project basis.
- The local road network would be expanded and improved in expanded use areas. In private development areas, private maintenance would be encouraged. There will be an increase in the timber support road system, public and private.

Services and Public Facilities

- A new service area for sewers and water could extend from Alder Creek to Rhododendron, depending upon community acceptance and county decision making. In areas not served by sewers, on-site disposal will meet DEQ standards. (See Appendix, STR report)
- In areas of high recreation use, sanitary systems for public convenience will be required. There will be public education programs on wilderness sanitation.
- Additional fire protection for Forest lands would include management of Forests fuels, fire suppression forces and resource activities to prevent major un-controlled fires.
- In Hood River County, Crystal Springs Water System will have to set priorities in serving competing domestic demands and farm area needs. A new water source and system will be needed in designated recreation housing areas.
- Significant expansion of police, fire protection facilities and staff, and additional elementary schools will be necessary.
- The rest area and information center may be built at the Zigzag intersection on Highway 26.

Land and Community Classifications

- Significant changes in the existing zoning pattern on either side of the mountain would not occur, with the possible exception of the Cherryville - Alder Creek and Huckleberry Mountain areas (proposed rural housing and forestry) and where new resort and commercial proposals are determined to be in conformance with the present planning policies and designation. Restraints on development in areas considered unsuited for housing will continue.

Administration and Public Costs

- Limited interagency coordination, increased land competition and demands and less efficient allocation of resources could result in the highest public expenditure level and corresponding tax increase. The counties in particular would have to exercise more control over land use.
- Revenues from timber harvesting would continue to increase. However, over the long term, the potential increase would be reduced due to conversion of productive forest lands to private housing.

CAPACITIES BY COMMUNITY AND PROPOSED SERVICE AREAS

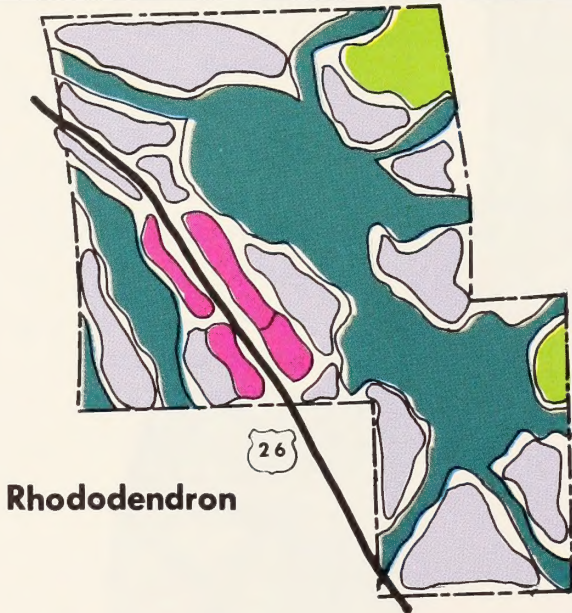
DESCRIPTION	Density factor		Potential Units	
	(Units/Acre)	Acres	Low	High
I. Westside				
A. Proposed sanitary areas				
Lolo Pass	4	486	972	1944
Rhododendron	2-4	390	780	1560
Welches	R			
Low density residential	2-4	947	1894	3788
Planned resort	4-6	365	1460	2190
Developed recreation		108	-	-
Wildwood - Faubian	2-4	499	998	1996
Truman Road	2-4	766	1532	3064
Timberline Rim	4	168	672	672
Wildwood Recreation Site		208	-	-
Brightwood	2-4	1006	2012	4024
Subtotal			10320	19238
Sleepy Hollow	2-4	354		
Cooke's Ranch	2-4	630		
Alder Creek	2-4	427		
Subtotal			2822	5644
TOTALS (A)				
Low density residential		5673	11684	22692
Planned resort		365	1460	2190
Developed recreation		316	-	-
TOTAL UNITS			13144	24882
Population(@ 3 persons/unit)			39400	74600
B. Government Camp				
Low density residential	4			
Resort and commercial	4-6			
Developed recreation				
Subtotal		460	520	1180
TOTAL UNITS (A + B)			13664	26062
Population(@ 3 persons/unit)			40900*	78200*
II. Eastside				
A. Parkdale		220	-	580
B. Upper Valley	.5-1	3400	1730	2350
TOTAL UNITS			2300	3400
Population(@ 3 persons/unit)			6900	11700*

*NOTE: A more definitive range based on land and development suitability criteria (in addition to gross acreage and the given units/acre factors) has been estimated. This refinement provides the following population capacity: Low-46000, High-48000.

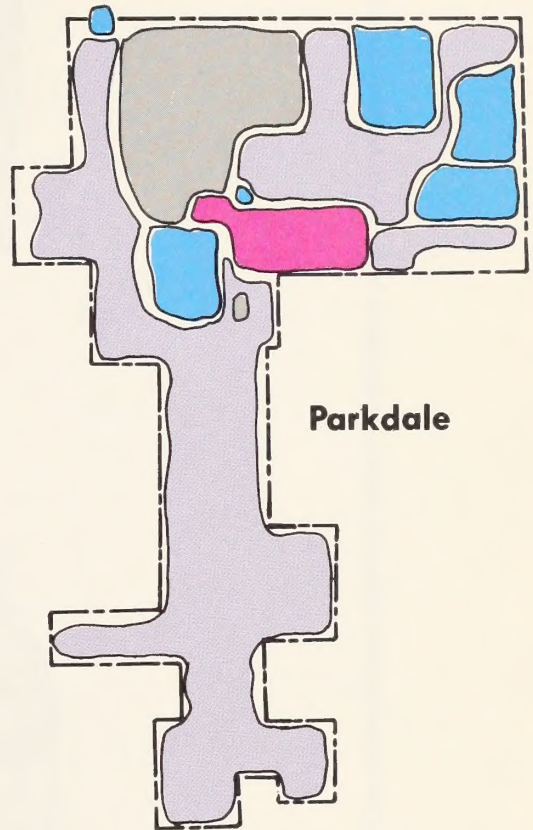
COMMUNITY LAND USE

ALTERNATIVE A

MAP 17

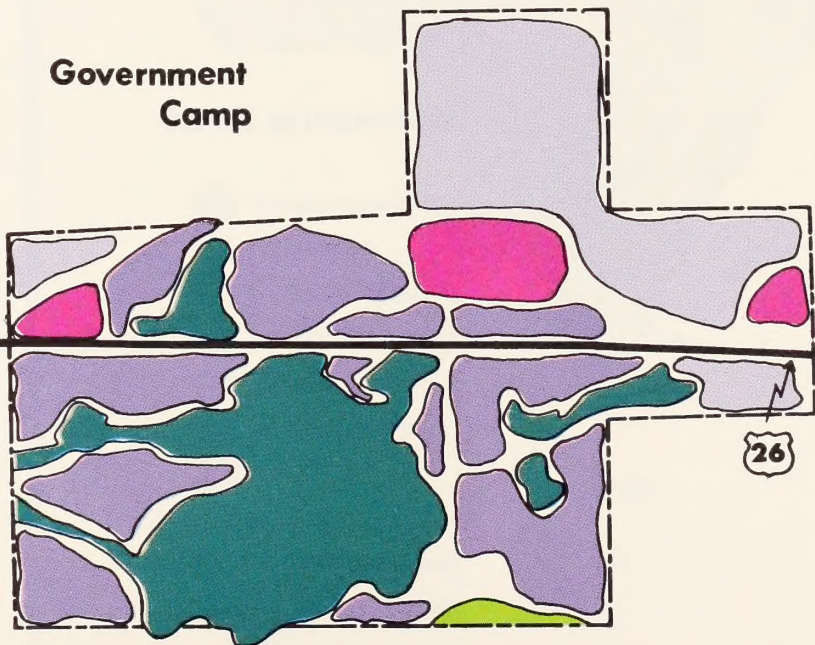


Rhododendron



Parkdale

Government
Camp



- Environmental Protection
- Scenic Forest
- Housing
- Low Density Recreational
- Planned Resort (Proposed & A only)
- Commercial
- Industrial
- Special Site

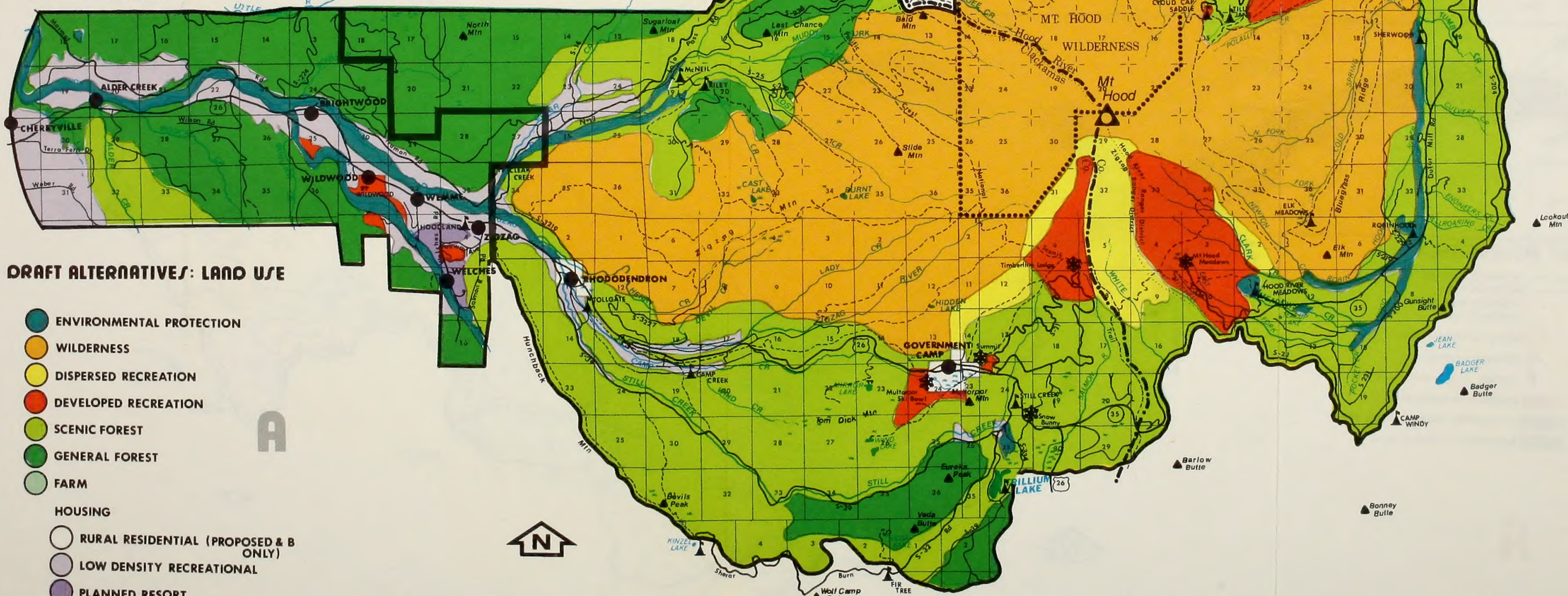


MT. HOOD PLANNING UNIT

- Primary Road
- Secondary Road
- 26 U.S. Highway
- 35 State Highway
- S-39 Forest Service Road
- - - Trail
- ▲ Campground
- ▽ Picnic Area
- ❄ Winter Sports Area

Boundaries

- Planning Unit
- Wilderness
- - - County
- National Forest



DRAFT ALTERNATIVES: LAND USE

- ENVIRONMENTAL PROTECTION
- WILDERNESS
- DISPERSED RECREATION
- DEVELOPED RECREATION
- SCENIC FOREST
- GENERAL FOREST
- FARM
- HOUSING
- RURAL RESIDENTIAL (PROPOSED & B ONLY)
- LOW DENSITY RECREATIONAL
- PLANNED RESORT
- SPECIAL SITE (A & B ONLY)

0 1 2 3 4 5
miles



R6E

R7E

R8E

R9E

R10E

T15

T25

T35

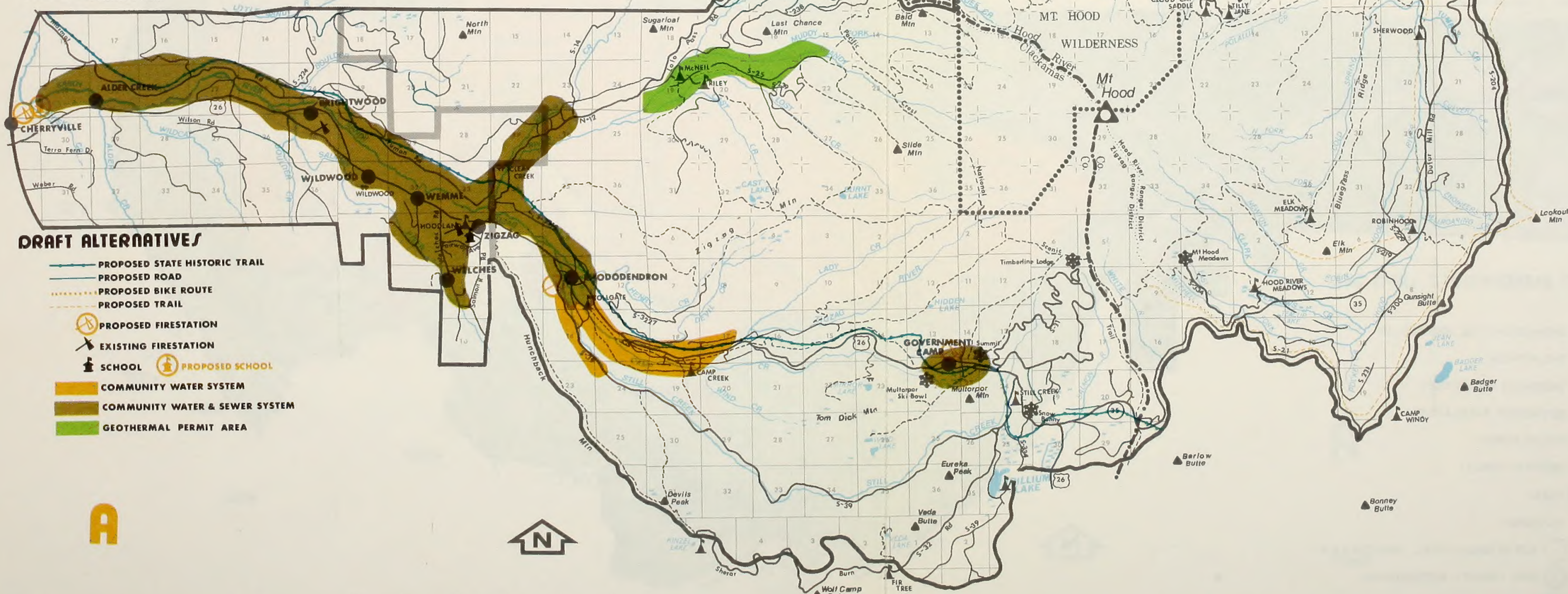
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MAP 19 MT. HOOD PLANNING UNIT

- Primary Road
- Secondary Road
- 26 U.S. Highway
- 35 State Highway
- S-39 Forest Service Road
- - - Trail
- ▲ Campground
- ▽ Picnic Area
- ❄ Winter Sports Area

Boundaries

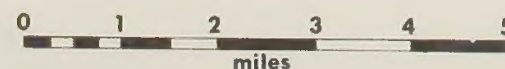
- Planning Unit
- Wilderness
- - - County
- ▬ National Forest



DRAFT ALTERNATIVES

- PROPOSED STATE HISTORIC TRAIL
- PROPOSED ROAD
- PROPOSED BIKE ROUTE
- PROPOSED TRAIL
- ⚡ PROPOSED FIRESTATION
- ⚡ EXISTING FIRESTATION
- 🎓 SCHOOL
- 🎓 PROPOSED SCHOOL
- 🟡 COMMUNITY WATER SYSTEM
- 🟢 COMMUNITY WATER & SEWER SYSTEM
- 🟢 GEOTHERMAL PERMIT AREA

A



R6E

R7E

R8E

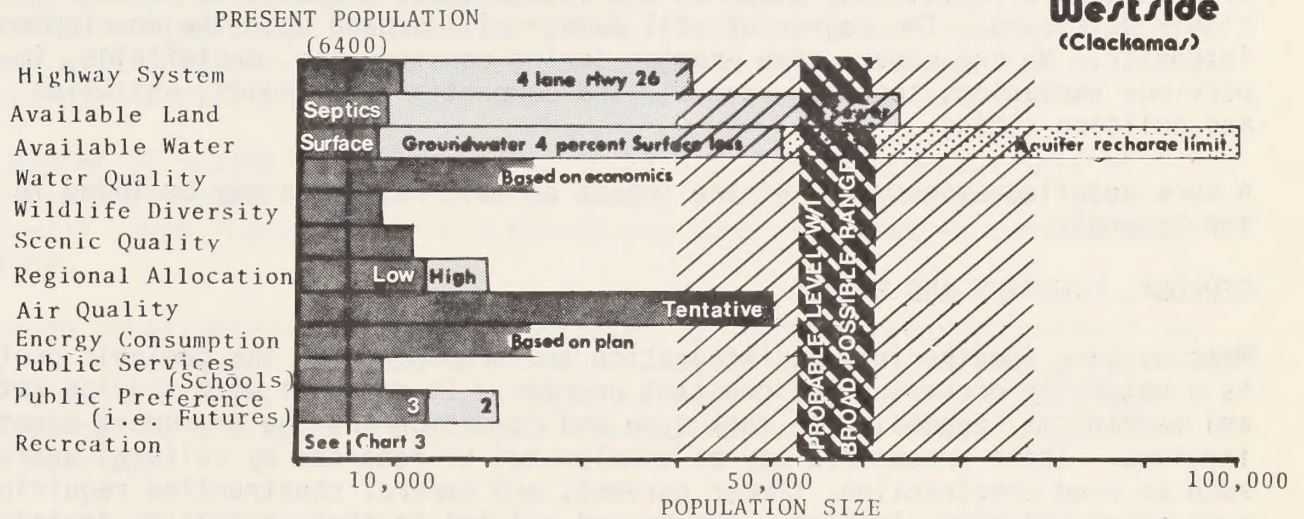
R9E

R10E

T45

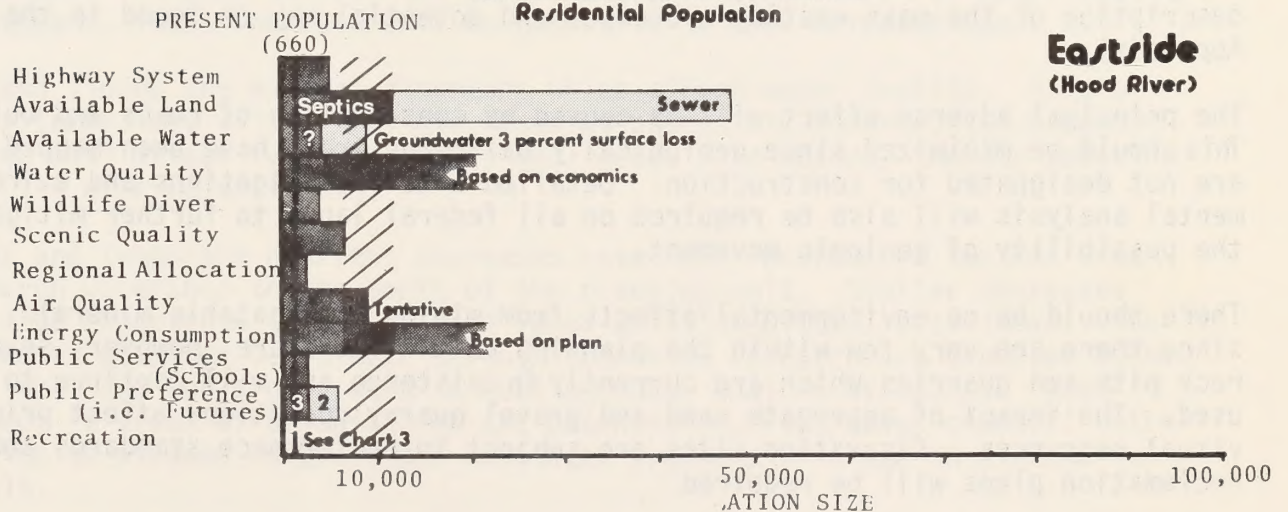
ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

Westside
(Clackamas)



ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

Eastside
(Hood River)



ENVIRONMENTAL IMPACTS - ALTERNATIVE A

SOILS

The impact on soil resources will be lowest on 58,100 acres, with slight to moderate erosion from trail and campsite development. There will be some erosion from farm operations and soil compaction around stock watering areas.

Erosion from roads and soil compaction from logging systems and developed recreation sites will occur on 80,800 acres. These impacts have been rated low to moderate.

High to severe impacts may occur on the 19,095 acres proposed to be more highly developed. The degree of soil damage will depend upon the development intensity. We can expect high erosion during construction, drainfields, impervious surfacing, top soil removal, and compaction from roads, utilities and building siting.

A more detailed assessment of the impact on soil resources may be found in the Appendix.

GEOLOGY, MINERALS AND ENERGY

Mass wasting (weathering, disintegration and transport) of the geologic profile is a naturally occurring and constant process. It proceeds with varying rates and mechanisms, depending on rock type and condition and the transport agent involved. These processes may be accelerated or retarded by cultural activities such as road construction, timber harvest, and general construction requiring excavation and slope loading. The hazard related to these processes depends on the cultural proximity and frequency of exposure in the case of land movement and on stream use in relation to turbidity, bed load and glacial dams. Timber production is affected regardless of exposure frequency, in that the damage is to the soil resource and therefore regeneration capability. (A more complete description of the mass wasting processes and potential may be found in the Appendix)

The principal adverse effect will be caused by construction of roads and buildings. This should be minimized since geologically hazardous areas have been mapped and are not designated for construction. Detailed site investigations and environmental analysis will also be required on all federal lands to further mitigate the possibility of geologic movement.

There should be no environmental effects from mining of locatable minerals, since there are very few within the planning unit. There are, however, several rock pits and quarries which are currently in existence and will continue to be used. The impact of aggregate sand and gravel quarry operations affect primarily visual resources. Excavation sites are subject to performance standards and reclamation plans will be required.

Public lands would continue to be available for energy development. There is a known potential for geothermal development in several areas. Proposals will be evaluated on a case-by-case basis. The environmental impacts from geothermal developments will be evaluated in environmental analysis reports upon each proposal.

There is a potential under Alternative A for additional rock quarries, both on public and private lands. Existing rock quarry sites will be continued to be utilized and performance standards and reclamation plans will be required.

Under Alternative A there is a possibility of the new utility corridors. They will be evaluated on a case-by-case basis. Existing power transmission corridors will be retained. Landscape management and revegetation programs by public agencies will be established to make the corridors blend better with the natural landscape. Existing rights-of-way could be expanded as needed.

WATER QUALITY AND QUANTITY

This alternative will cause an increase of about 23% in the harvest level. Through a low density road system and proper logging techniques, minimal increase in sediment will be expected. Glacial streams now turbid with glacial flour will continue to be unsuited for domestic water. Streamside management prescriptions will allow no more than 2% increase in water temperature.

The number of houses will increase up to an 8.5 times increase. This will increase impermeable surfaces through homes, drives, parking areas, etc. This will cause increased surface runoff and some reduction in surface water quality.

Although urbanization has been demonstrated to increase rates of surface runoff, the affects are expected to be only localized and not influence the runoff of the major streams in either the Sandy or Hood River basins. Localized increases can be predicted and adequate drainage structures installed as the area develops.

If additional water systems go in using surface water, summer flows in the affected streams will be reduced, causing deterioration of fisheries and increased water temperatures during the summer and early fall season.

Costs will increase in both the public and private sectors for water quality management. Cost increase will be geometric to the increased use.

Fire and floods are natural disasters which affect water quality. None of the alternatives will affect the flooding potential, however, the proposed action will affect fuels treatment and reduce fire hazard, thereby reducing the risk of a major fire.

Minor and temporary nutrient increases have been recorded in the Fox Creek research watershed to the north of the planning unit. Similar increases could be expected with the planned level of silvicultural activities. The increases although detectable through intensive research are expected to be negligible and non-significant in meeting water quality standards. With respect to areas of urbanization the potential for increased chemical introduction to streams is great and localized problems of algae in streams may result.

AIR QUALITY

The proposed action will cause increased noise levels. There will be temporary air quality degradation from increases in smoke and dust levels from burning and log hauling and road construction activities. These impacts will be minimized by requiring that management activities maintain air quality standards equal to EPA level 1. Under this plan, the auto and furnace emissions could increase over the existing situation by a factor of 3.25. (Details of emissions may be found in the Appendix)

VISUAL RESOURCES

Under Alternative A, 128,100 acres (81% of the lands in the planning unit) will be managed to meet the highest three visual quality objectives of preservation, retention, and partial retention.* This represents an increase of 19% over the lands currently managed for preservation, retention and partial retention. The major impacts on the visual resources will come from activities such as timber harvesting, road construction, housing and commercial and industrial developments.

With present direction the total acres managed under the five visual quality objectives would remain essentially the same as shown in the existing situation. This applies visual quality objectives to only the Forest Service lands which comprise 129,400 acres of the total 158,000 acres in the planning unit. As a result of implementing this interagency land use plan, the visual quality objectives would apply to all of the planning unit except for the 3,500 acres of "Farm" allocation.

The Preservation objective in the existing situation is applied only to the existing Mt. Hood Wilderness of 14,000 acres, whereas the proposed plan and alternative plans apply the Preservation objective to both the existing wilderness and the two proposed wilderness study areas. Under the existing situation, these study areas are inventoried for Retention or Partial Retention.

Under this alternative, the acres added to the Preservation objective for the wilderness study areas would reduce the amount of Retention and Partial Retention. However, the total acres in these two objectives are brought back up to nearly their previous amounts through the inclusion of other lands outside the National Forest to meet the visual quality objectives.

For these reasons, a general statement could be made that under this alternative, visual quality would be upgraded as compared to the existing situation. However, one must look to the land allocation maps and the visual objectives or standards for each unit to see where the differences occur.

FIRE MANAGEMENT

The largest amount of land for timber production is allocated in this present direction alternative. This will create the greatest total accumulation of post-harvesting slash. The combination of these high-hazard fuels and the high risk associated with harvesting and post-harvesting activities results in the greatest short-term conflagration potential as indicated by the computer model. An active and timely program of fuel management and hazard abatement will maintain this potential at levels lower than or equal to the other alternatives, however.

*See Glossary

The high level of housing development envisioned here would create the largest increase in the risk of forest fire from burning buildings. Adequate fire prevention and safety regulations would mitigate this effect, however.

Continuing to operate with existing fire control facilities will be less efficient than the proposed plan. The sub-option of Alternative A, which does not permit sewers, will provide more costly and less effective fire control, causing more significant losses than the proposed plan in Clackamas County.

WILDLIFE

2,600 acres are recommended under Alternative A for environmental protection purposes. Environmental impacts on wildlife of Alternative A will be swift and severe compared to the other alternatives. This is because Alternative A lacks the organization and the coordination between agencies that the proposed plan will have. As in the proposed plan, the most critical impact to wildlife will be the continuing increase in the human population. Alternative A has the potential for extremely high human population levels. A significant reduction in wildlife diversity can be expected to occur particularly in the Highway 26 corridor. Populations of animal types compatible with residents will increase (crows, starlings, robins, sparrows, chipmunks, mice, rats, etc) and those not compatible will be reduced.

There will be a gradual decline in availability of winter range through demands for other uses. This will result in an increase of harassment from people and dogs. Land development, timber harvest and roads will cause increased alteration of existing wildlife habitat and species competition.

A detailed assessment of environmental impacts upon wildlife can be found in the Appendix.

FISHERIES

The highest human population densities of any of the alternatives will be possible under this alternative. This alternative would also permit the highest level of resource management. Assuming that these high levels did occur, there would be a reduction of fish habitat due to non-point pollution (sediment, solid waste, litter, etc.), harassment by residents and visitors, additional use of streams for non-fishing purposes, and the drawdown of surface waters for municipal purposes.

The quality of the fishing experience would be reduced and generally this growth level permitted would cause some shift in stocking programs to areas which can be used by the public and provide better fishing experiences and habitat for the fish. The productivity of the streams for anadromous fish would also be reduced.

Point pollution would be reduced if larger central sewers are installed. However, there is a potential for increasing the non-point pollution by installation of these facilities.

AGRICULTURE

This alternative should have little impact upon the amount of agricultural production in Hood River County. However the farm land in Clackamas County would be available for residential construction and conversion from present use. In Hood River County the agricultural lands would remain in farming, and the one processing industry at Parkdale in industrial; therefore, little impact would be expected on agricultural production. In Clackamas County however, if housing demands continue to increase the agricultural production would be essentially eliminated.

The impact upon the irrigation systems may be more substantial, particularly if the activities in the watershed produce sedimentation. Additional maintenance costs will be felt by the East Fork Irrigation District which obtains its water from the East Fork of Hood River. The Middle Fork Irrigation, which obtains its water from watersheds outside of the Planning Unit, will not be affected by these alternatives. Land activities which contribute the most sedimentation are residential construction, road building and timber harvesting.

TIMBER MANAGEMENT

The existing plans, if fully implemented will retain 40,100 acres of forest and non-forest land without harvesting and roads. This is a 1,000 acre drop from the proposed plan; the scenic forest land will be 8,800 less, and the general forest land will be 12,500 acres more. Although the present plans do not speak to aerial logging, there is little question that much of the Still Creek and forests east of Hood River may of necessity, be logged by aerial systems. The following chart illustrates the timber associated allocations and revenues.

Timber	Units	Federal	State and County	Private
Comm Forest	Acres	50,331	4,440	14,629
Current Yield	Mbf/yr	20,737	1,830	6,025
Timber Value	\$/yr	3,240,551	283,321	932,791
County Tax Rtn	\$/yr	887,140	212,491	94,211
Direct Jobs	# emplys	117	10	34
Payroll Values	\$/yr	5,967,000	510,000	1,734,000
High Yield	Mbf/yr	34,503	3,046	10,030
Timber Value	\$/yr	5,391,763	471,582	1,552,845
County Tax Rtn	\$/yr	1,459,450	353,687	94,211
Direct Jobs	# emplys	194	17	56
Payroll Values	\$/yr	9,894,000	867,000	2,856,000

Note: The annual harvest estimates are based on managed yield tables and are valid for comparative purposes only. These estimates should not be construed as being an annual harvest quota. This comparison reflects the potential production of the area based on site potential and current technology.

WILDERNESS AND PRIMITIVE RECREATION

Alternative A provides for two areas to be studied for wilderness potential. 32,500 acres are included in the Zigzag Mountain and Mt. Hood Wilderness Areas.

Since the areas proposed for wilderness will not have any timber harvesting conducted, there is a potential impact on this industry. This will be somewhat mitigated however, by the values to be obtained through increased tourism and recreational revenues generated by people seeking wilderness type experience.

In designated wilderness, trails will be provided to protect wilderness values. Those trails in conflict will be abandoned. Outside the designated wilderness, existing trails will be maintained and additional trails provided. The trailhead for the Ramona Falls Trail will be moved back to the end of the existing pavement in order to reduce the number of visitors and resultant impact at the Ramona Falls area.

RECREATION

Under Alternative A, approximately 6800 acres are designated for concentrated recreation and skiing. An additional 4500 acres are designated as dispersed recreation, although dispersed recreation may also occur in a number of other land categories. Areas and facilities for golf and downhill skiing are to be considered on a project-by-project basis. Installation of new facilities at the ski areas could result in additional impacts on the visual resources as well as on soils and water quality.

Because of the high population user levels expected under Alternative A, the quality of recreation experiences are generally rated the worst of the three alternatives. Activities such as snowplay, fishing, hunting, camping, driving for pleasure, scenic viewing, water sports and mountaineering will suffer most. The effects upon resort activities, golf and picnicking, will be somewhat less. In relation to visitor day use to be expected, activities such as snowplay, fishing, hunting, scenic viewing will have the lowest level, while activities such as skiing, camping, water sports, mountaineering and resort activities will be the highest.

HIGHWAYS - STATE

Alternative A would require widening of the existing four lane highway between Cherryville and Brightwood, taking right-of-way in a presently rural residential area. Expansion of the existing two lanes to four lanes between Brightwood and Zigzag would have substantial impact on the Dwyer Memorial Forest Corridor (the largest trees are immediately adjacent to the existing highway) and would therefore, have a significant effect on the highway users' visual experience. Private holdings have already been acquired for right-of-way along the north side of the existing alignment and an additional taking would probably not be necessary. The Bureau of Land Management owns the property bordering the south side of the highway. Vegetation here ranges from late second growth to climax. Electric and telephone lines are located on both sides of the highway. Expansion of the remaining two lane units of the Zigzag-Rhododendron Section to

four lanes would probably not displace residences or businesses due to existing setbacks, but might require a revision of the local circulation patterns and access points of these population centers to reduce congestion of the main highway. In the Rhododendron-Timberline Highway Section, the remaining four miles of two lane highway would need to be upgraded to at least provide a climbing lane in addition to widening of the existing two lanes. Widening here would require removal of old growth timber.

Widening of the highway one mile east of Rhododendron would probably not have any direct adverse effects on Tollgate Park -- a Forest Service campground located between the highway and Zigzag River at an historical site which is recognized as a candidate for inclusion in the National Register of Historical Places. Any project significantly affecting this park would be subject to Section 4(f) procedures which would ensure that all reasonable steps would be taken to avoid or reduce impacts on this site.

A more detailed analysis of the impacts of Alternative A on the environment may be found in the Appendix.

FOREST SERVICE ROADS AND TRAILS

There are no major Forest Service roads proposed under this alternative. The approximately ten miles of roads which are proposed are primarily extensions of existing roads and in most cases, are very short sections which are necessary for completing an existing system. The 52 miles of proposed trails include a bicycle trail and a low elevation hiking trail. This alternative will include more short spur roads than either the proposed plan or Alternative B. The roads which are proposed have been laid out in areas which have suitable soil and terrain types.

Alternative A has greater potential for biological impacts than the proposed plan or Alternative B, primarily because of the additional spur road systems which may be built. Those impacts would be the increasing of foot and vehicular traffic through areas which were previously unimpacted. This would produce a situation of wildlife harassment and its resultant reduction in wildlife diversity, the potential detrimental impact of foot traffic on vegetation, soil compaction, blowing dust, temporary noise and some possible soil movement. Social benefits would occur from the development of the roads and trails under this alternative. Scenic values may be improved through revegetation and re-shaping of some existing roads, as well as the new proposed roads. Additional trails will provide a means for dispersing the recreation use over more area as well as providing additional recreation facilities for an increasing need.

ENERGY CONSUMPTION

Overall energy consumption would be at its highest level under Alternative A due to expanded development, lack of concentration and higher traffic volumes. BTU consumption per year could increase by a factor of 4.4. However, energy efficient construction and the concentration of developments will be encouraged. (See Appendix for a detailed evaluation of energy consumption.)

The opportunity for geothermal development is available with alternative and could change the area from its present condition as an energy consumer to an energy producer.

HISTORIC AND ARCHAEOLOGICAL SITES

The proposed plan will not affect either favorably or adversely, those sites not on the National Register of Historic Places, recommended additions or potential sites. All projects resulting from this plan will be evaluated for their effects on identified sites or areas in consultation with the State Historic Preservation pursuant to "Procedures for the Protection of Historic and Cultural Properties" (36 CFR, Part 800). The proposed plan maintains the opportunity for discovery of additional sites through reconnaissance and/or intensive survey as part of project plans.

In compliance with Section 2 of Executive Order 11593, the plan will not result in the transfer, sale, demolition or substantial alteration of lands seemingly with characteristics for future nomination to the National Register of Historic Places.

In compliance with Section 101(b)(4) of the National Environmental Policy Act and Section 1(3) of Executive Order 11593, the proposed plan will not affect, either favorably or adversely, the preservation and enhancement of nonfederally owned districts, sites, buildings, structures and objects of historical, archaeological, architectural or cultural significance. The Clackamas County Zoning Ordinance for Recreational-Residential (R-R) District, Section 22, states that effects of historic properties will be determined and evaluated as a part of each major development plan within this zone.

SEWERAGE

Essentially, the entire area will be available for sewerage under Alternative A. This will open up much of the area for development and its subsequent impacts. There will be unavoidable short term inconveniences due to sewer construction, noise, dust and equipment in the streets, street patching, vegetation clearing, etc. Highest construction costs would occur under this alternative. There may be some slight odor problems related with forced mains. However, there will be no air quality problems in relation to treatment facilities. The light productive rates would be possible with this alternative and disposal outside the planning unit would be necessary. Treatment facilities and home stations will have proper architecture and landscaping for minimal visual impacts. The land required to accommodate treatment components and facilities will be permanently set aside as a plant site and will need to be fenced to limit public access. In the instance where land disposal will also be required to conform with the zero effluent discharge standard, additional acreage will have to be set aside. Land used for spray irrigation of effluents could have dual uses such as pasture land or timber growing in addition to waste disposal. The land would have to be under the immediate control of the sewerage authority, although outright ownership would not be necessary. Treatment plants may become a dominant feature in the landscape unless designed with generally a low profile and screened. The effect of these facilities upon the land-based ecosystem will be permanent and a change in the present system can be expected.

The long term impact of the treatment facilities will be that the land use will be dictated for the life of the plant. The continual use of the plant site will be necessary until it is proven feasible to abandon its use in favor of a more efficient facility. At that time, the land could revert back to its previous use. Land used for effluent disposal will not be subject to quite the same impact, in that it will not have the permanent structures built upon it. This will enable it to more easily revert to its natural state when abandoned.

Construction of irrigation fields which may be proposed may cause some influence on the ground water tables of the area, in that the water that does not evaporate at the time of application or that is not transpired from the vegetation, will percolate downward and join the ground water. By carefully locating these irrigation fields in proper soil conditions, these effects can be alleviated.

The treatment of sewage always results in generation of quantities of solid wastes and sludges. These sludge solids will be continuously produced in proportion to the population being served. Treatment and stabilization of the organic sludges will be a part of any sewage treatment plant. Proper disposal sites will be selected for the disposal of sludge.

The construction of sewage treatment facilities involves all of the adversities of clearing, grading, noise and inconvenience. These are, for the most part, short term problems. Plants of the size being considered will be built in about a year's time. Natural site drainage will have to be maintained throughout the construction. Since the site chosen will be out of the floodplain, no extensive erosion will be anticipated either during or after construction. Unprotected land may erode during construction but this can be minimized with proper drainage control. Conversely, dust during construction will be a problem also, but this will be limited to the construction site and it would not cause too much nuisance for the adjacent areas. Noise during construction will have to be tolerated.

In all areas not served by sewers, onsite sewage disposal methods will meet the Department of Environmental Quality standards.

For more detailed comparison of the effects of Alternative A, please refer to Summary Effects Section of the EIS as well as the Appendix.

DEVELOPMENT AND GROWTH

As based on current trends and existing planning or zoning allocations, Alternative A provides for a level of residential growth 7.5 to 8.5 times the present population. In addition to projected resident and seasonal housing increases, a sizable influx of commuter-oriented suburban development would have to be assumed in order for this level to be achieved. This would mean those effects described under the proposed plan assessment (page 122) would be appreciably magnified. Existing rural-forest and some farming areas would not be recognized and their transition to more concentrated patterns of development and residential use would be simply a matter of time. The present forest character and small mountain community pattern, especially in the westside corridor,

would be altered and lost. There would be no commitment to establish reasonable sideboards on growth and development (i.e. through new zoning, defined service areas and recognition of major capacity limits) and reliance on a strict performance standard approach would be inadequate in checking such eventual change. Direct capital and maintenance costs (public and private) to serve the level of growth allocated under Alternative A are estimated to be in the neighborhood of \$187 to \$225 million, exclusive of residential construction and land costs.

Alternative A provides for considerably more growth than any projected from a regional standpoint (roughly 200%). Housing opportunities would be nonexclusive and maximum flexibility for development interests would be maintained.

See summary for more quantitative representation of the major effects of Alternative A.

ECONOMY

Large expansions in the resident population would be expected under this plan without corresponding increases in recreation sites and facilities. This is not a practical assumption and the probability of achieving this situation is very low. Population is closely correlated with recreation and tourism activity. Recreation, skiing and primitive backcountry land would all be decreased according to this proposal. Use of existing land for recreation would have to be demonstrated to accept substantial increases in intensity. Based on this preliminary assessment, it is doubtful that this can be shown.

Population development without economic base development is not the case historically. Over the long run, people locate in an area for a specific reason -- income. An exception to this trend would be acceptable if most all growth is expected recreation home development or commuter suburbanization. This is more dependent on conditions in that single market than government growth preferences.

Assumptions for estimates are described in the Appendix:

PRELIMINARY ESTIMATES OF COMMERCIAL-RECREATION ECONOMIC ACTIVITY IN THE MT. HOOD PLANNING UNIT ^{1/}

	<u>Commercial-Recreation</u>
Total Value (all revenue)	\$27,150,000 to 108,753,000
% of all revenue	92%

Wages and employment cannot be accurately estimated on proposal development scheme under Alternative A.

Percentages reflect relative influence of sector to total revenue at given population level of 15,000-60,000.

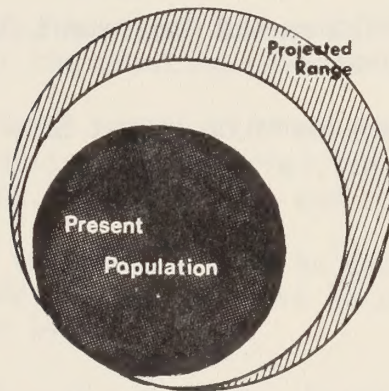
Source: Prepared by Mid-Columbia Economic Development District.

^{1/} See Summary Section for comparison of commercial-recreation activity with forestry and agriculture activities.

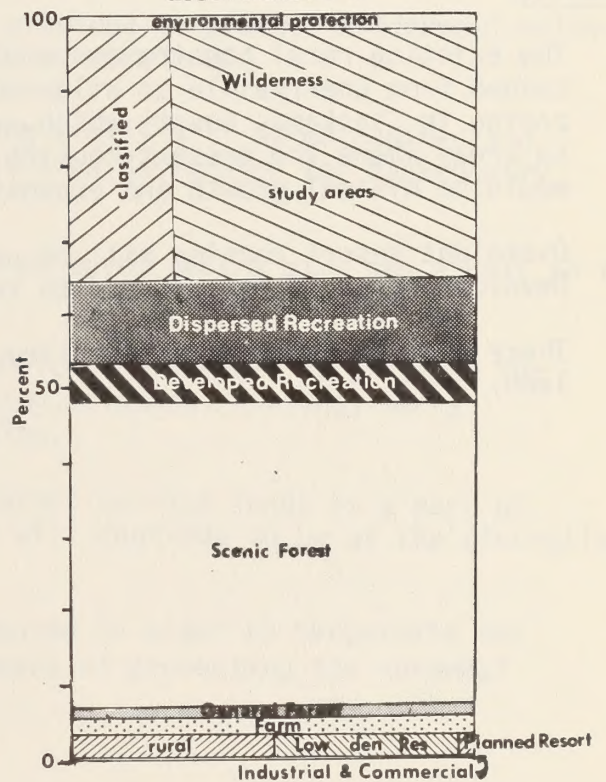
ALTERNATIVE B

Perspective. This alternative to the proposed action reflects the concern of the communities and persons desiring to retain the area much as it is now. It recognizes the need for some additional growth and improved sewage collection in existing areas. Additional lands for wilderness study and maintenance of farms and large undisturbed forest areas are also stressed. Highway 26 is indicated for limited improvements but basically maintaining the existing facility. The design population level under this alternative would be 12,000 to 16,000 residents, seasonal and year around.

**DESIGN POPULATION
alternative b**



**ACREAGE ALLOCATION
alternative b**



ALTERNATIVE B - NARRATIVE DESCRIPTION

Agriculture and Forestry

- Designated farmland in Hood River County would be 3500 acres. In Clackamas County, existing farm areas would be designated for forest production. All designated (Proposed Plan) rural housing in Hood River County is indicated as forest.
- 59,300 acres are available for forest production. These areas will be available for full-yield timber production with the exception of recreation travel corridors, hillsides visible to community areas, streamside corridors and wetland buffers. The full range of silvicultural practices will be used, designed to keep sites productive and trees in a healthy condition. Soil erosion and slippage is to be avoided, while meeting scenic standards and protecting habitat diversity for wildlife.

Housing

- The existing rural housing and small farm wood-lot character will be maintained from Cherryville to Wildwood. Existing recreational-residential zoning in Clackamas County which encourages cluster housing will apply only to areas where the present housing pattern is most concentrated. There would be minimal growth and expansion in Hood River Valley.
- Overnight resort housing will be permitted in Welches and Government Camp. Development would be confined to reduce the impact.
- There will be no changes in policy for the summer homes on Forest Service land.

Commercial and Industrial

- Expansion of existing commercial centers will be limited with no new centers designated.
- Strip commercial development along Highway 26 and 35 will not be permitted.
- Industrial use remains limited to Parkdale, to include agriculture processing and farm or forestry support activities.

Wilderness and Primitive Recreation

- Zigzag Mountain and Mt. Hood wilderness study areas will provide opportunities for addition of up to 33,500 acres to the existing Mt. Hood wilderness (14,000 acres). An additional 14,000 acres, mainly in the Still Creek area, are recommended for roadless recreation. The management direction for this area will be similar to that in the Salmon River backcountry area.
- In designated wilderness, trails will be provided to protect wilderness values. Those in conflict with those values are to be abandoned.
- Outside the designated wilderness, existing trails will be maintained and additional trails provided. The amount of area designated for backcountry hiking and camping is 25,200 acres.
- The trailhead for Ramona Falls trail will be moved back a mile and a half to the end of the existing pavement.
- Additional areas with more convenient public access would be provided for such activities as primitive camping, hiking, fishing, hunting, berry picking, wood cutting, and road side viewing.
- Areas for ORV use will be determined on Forest Service lands as a part of the ORV policy. ORV use on private lands will continue to be at the discretion of the land owner.
- A policy of surveillance burning may be adopted in order to perpetuate the natural wilderness ecosystems, and as a means of preventing the abnormal accumulation of forest fuels.

Concentrated Recreation and Skiing

- Designated areas for developed recreation and downhill skiing are approximately 6,600 acres. Some facility expansion would be considered, that is, additional lift capacity at Multopor Ski Bowl and Timberline Lodge, and completing chair number 4 at Mt. Hood Meadows subject to completion of ski area master plan.
- No overnight accommodations would be considered at the Mt. Hood Meadows and Cooper Spur areas.

- Timberline Lodge will provide overnight accommodation capacity for 250 persons. Downhill skiing will continue with an increase in lift capacity and new summer ski area on Palmer Glacier. A day lodge will be added governed by the concept of balanced onsite capacities. The main lodge is to be managed under a stronger historic preservation program than in the past.
- The existing wildwood recreation area would not be expanded.
- An area is designated for expansion of the existing golf course at Bowman's Resort in the Welches area.

Wildlife and Fisheries

- This alternative designates areas for environmental protection at 3600 acres.
- Additional limitations on land development would mean retention of winter range for big game populations primarily in several lower elevation areas with an active management program for deer and elk. Closure of Forest roads will take place in winter months to reduce big game harassment. Opportunities for wildlife viewing would be provided along trails and roads.
- Harassment of wildlife by people and free ranging dogs could increase. Poaching and dog control would be effected largely through local citizens and limited assistance through the state and county sheriff's offices.
- Rearing and stocking programs for the expansion of the existing anadromous fishery will take place. An active trout stocking program will maintain fishing opportunities.
- Minimum streamflow recommendations for aquatic fish habitat and free-flowing character are established policy.
- Future roads across stream courses will provide for fish passage and consider facilities for fish stocking (i.e. access ramps)

Minerals, Energy and Power

- Existing rock quarry sites, such as Robinson, White River and Brightwood would continue to be utilized. Performance standards and reclamation plans are required.
- Geothermal development is considered an incompatible use within the Planning Unit.
- Energy consumption (gasoline, home fuels) will be less than the proposed plan or Alternative A.

Transportation

- Generated traffic volumes indicate that only the first 2.5 mile section between Wildwood and Welches Road would need improved capacity (widened, two lane or three lane). Some intersection improvements above this junction, such as Zigzag are needed but existing highway capacities would suffice.

- Protecting and enhancing the scenic character of the highway corridor is a high priority. Parkway designs concepts will be encouraged. Highway 35 would need improvement at the Mt. Hood Meadows intersection but is basically adequate at its present design.
- Increased parking capacity at ski and resort areas would not be encouraged. Additional emphasis would be placed on providing mass transit to accommodate peak recreation use.

Services and Public Facilities

- Upgrading of sewage collection systems with existing problems would be required. Some expansion of service areas west and north of Bowman's Golf Course would occur. The sanitary systems at Parkdale and Government Camp could be expanded to serve present commitments. Septic systems on suitable soils would be allowed in other housing areas. (See Appendix, STR report).
- The area recommended for community water supply and services would be less than the proposed plan or Alternative A.
- The school at Welches would be expanded on-site.
- Central disposal sites for transferring solid waste would be established in both the westside corridor and the north approach.
- Domestic fire protection services and facilities would not be appreciably expanded, excepting Government Camp.
- Additional fire protection for Forest land would include management of Forest fuels, fire suppression forces and resource activities to prevent major uncontrolled fires.
- In areas of high recreation use, sanitary systems for public convenience will be provided. There will be public education programs on wilderness sanitation.

Land and Community Classifications

- The upper Hood River Area north of Parkdale would be reclassified to exclusive farm and scenic forest uses as indicated on the planning maps.
- New zoning to implement the forestry and rural housing designation in the Cherryville-Brightwood and Lolo Pass areas would occur. While limited to the commercial areas of Government Camp and the designated area northwest and north of Bowman's Golf Course, resort housing densities and/or reclassification could be a compatible consideration provided other performance measures are met.

Administration and Public Costs

- In minimizing public service requirements, this alternative will have the lowest public expenditure level, and taxes would be relatively stable.
- Timber receipts and revenues would stabilize at a lower level than the other alternatives.
- Interagency planning and management process would continue and be more streamlined. A planning council for the Mt. Hood Area, representing the major agencies with jurisdictional authority, will be appointed to monitor and advise on the plan implementation.

Figure 15

ALTERNATIVE B

CAPACITIES BY COMMUNITY AND PROPOSED SERVICE AREAS

DESCRIPTION	Density Factor		Potential Units	
	(Units/Acre)	Acres	Low	High
I. Westside				
A. Proposed sanitary areas				
Zigzag Village	4	77	308	308
Rhodendron CBD		20	-	-
Welches				
Low density residential	2-4	49	98	196
Planned resort	4-6	164	656	984
Developed recreation		79	-	-
Timberline Rim	4	168	672	672
TOTALS (A)				
Low density residential		314	1078	1176
Planned resort		164	656	984
Developed recreation		79	-	-
TOTAL UNITS			1734	2160
Population(@ 3 persons/unit)			5200	6480
B. Rhododendron		100	100	200
C. Government Camp				
Low density residential				
Resort and commercial				
Developed recreation				
Subtotal		205	980	980(310)*
D. Alder Crk/Sleepy Hollow		1400	120	200
E. Brightwood		645	56	113
F. Wemme/Zigzag		2850	440	880
G. Lolo Pass		-	60	120
Subtotal (B-G)			1756	2493
TOTAL UNITS (A-G)			3490	4650
Population			10470	13950
II. Eastside				
A. Parkdale		220	-	580
B. Upper Valley		-	-	-
TOTAL UNITS				580
Population				1750**

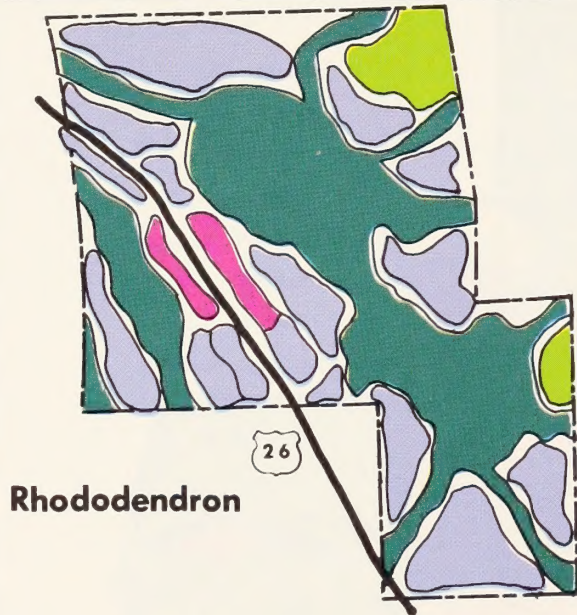
*NOTE: Approximate capacity of the new proposed sanitary plant.

** Does not include farm population.

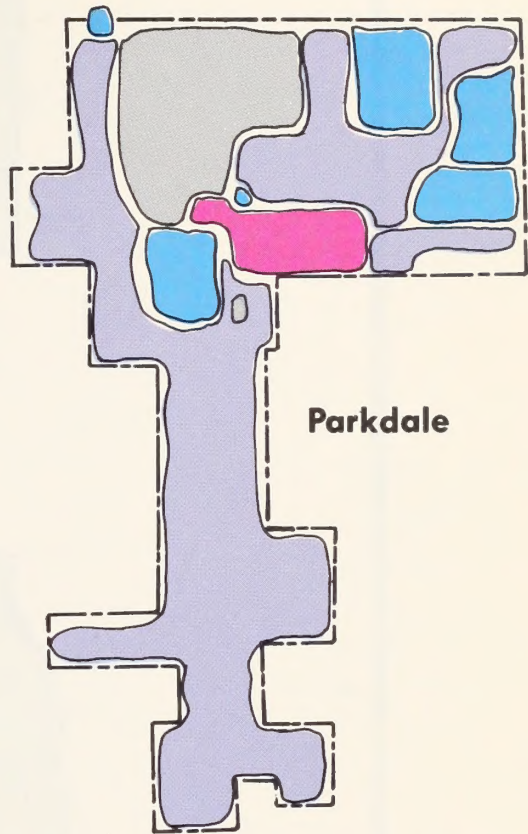
COMMUNITY LAND USE

ALTERNATIVE B

MAP 20

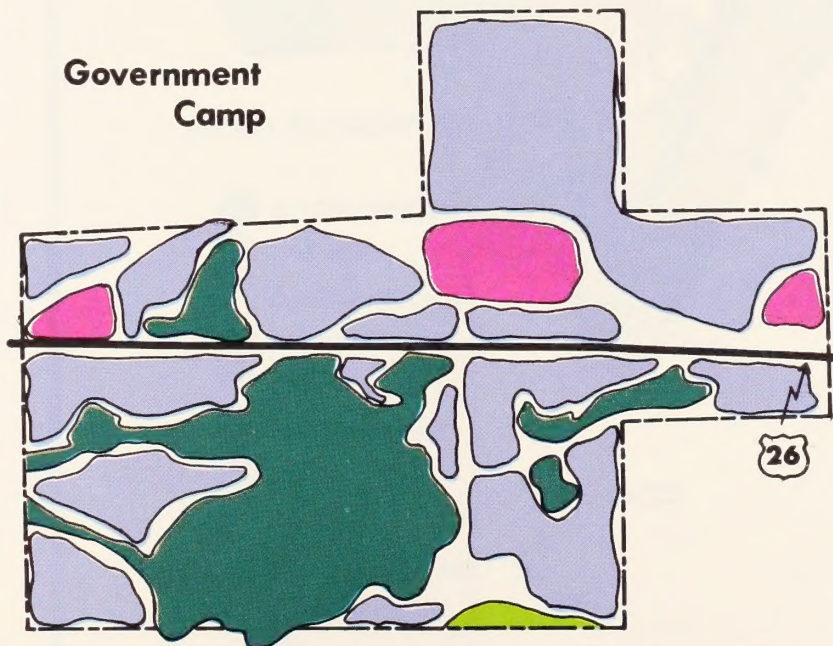


Rhododendron



Parkdale

Government
Camp



- Environmental Protection
- Outdoor Recreation (Proposed plan only)
- Scenic Forest
- Housing
- Low Density Recreational
- Commercial
- Industrial
- Special Site

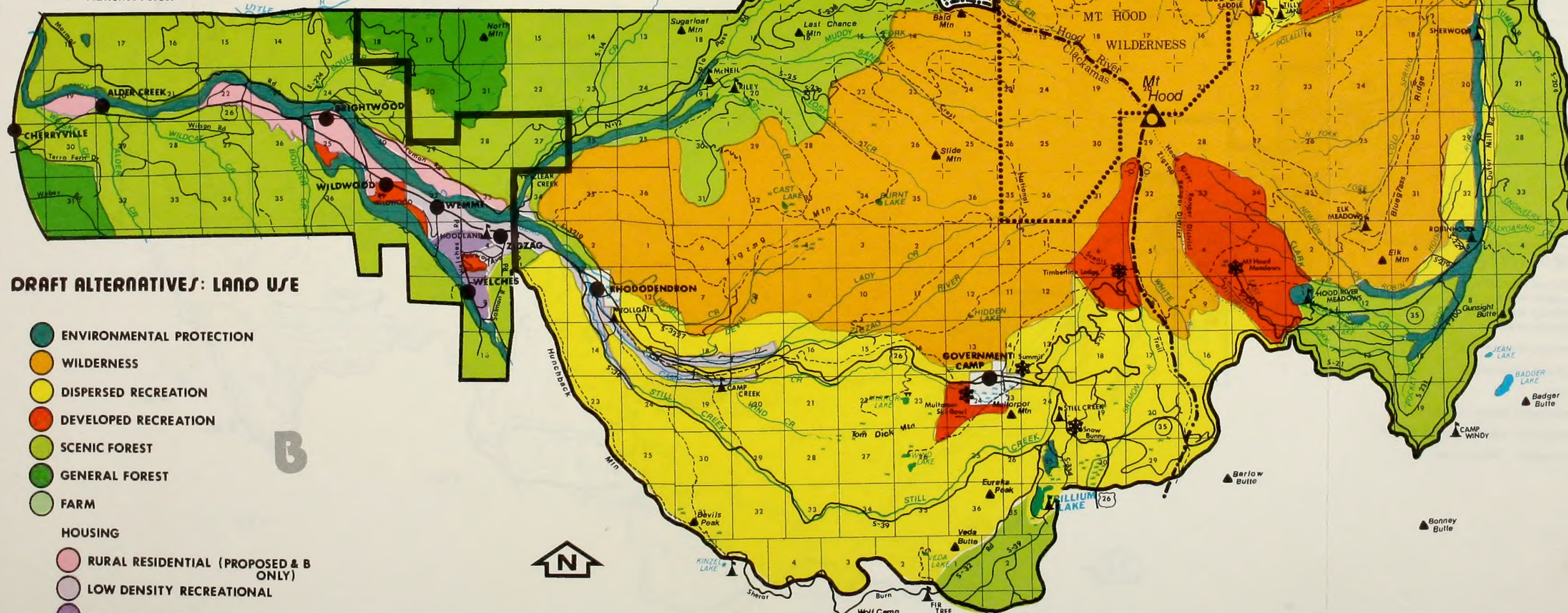


MT. HOOD PLANNING UNIT

- Primary Road
- Secondary Road
- (26) U.S. Highway
- (35) State Highway
- S-39 Forest Service Road
- - - Trail
- ▲ Campground
- ▽ Picnic Area
- ❄ Winter Sports Area

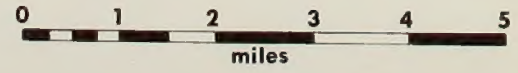
Boundaries

- Planning Unit
- Wilderness
- - - County
- ▬ National Forest



DRAFT ALTERNATIVES: LAND USE

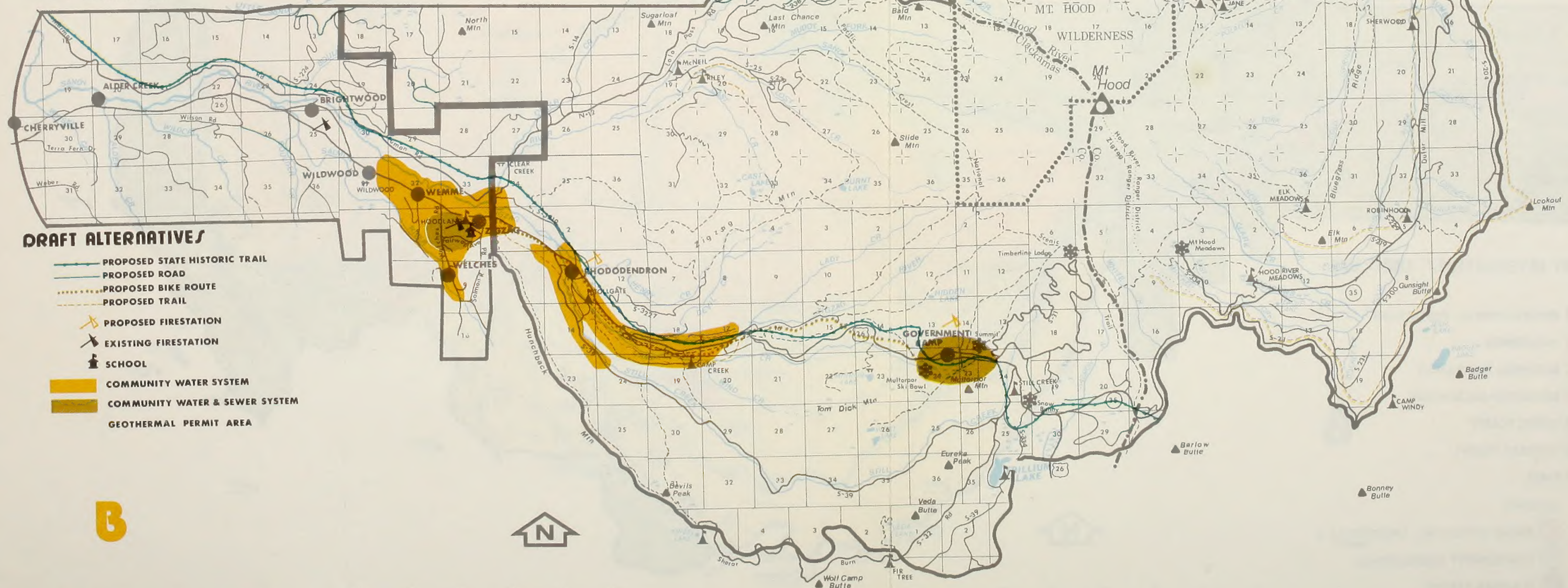
- ENVIRONMENTAL PROTECTION
- WILDERNESS
- DISPERSED RECREATION
- DEVELOPED RECREATION
- SCENIC FOREST
- GENERAL FOREST
- FARM
- HOUSING
 - RURAL RESIDENTIAL (PROPOSED & B ONLY)
 - LOW DENSITY RECREATIONAL
 - PLANNED RESORT
 - COMMERCIAL
 - SPECIAL SITE (A & B ONLY)



MT. HOOD PLANNING UNIT

- Primary Road
- Secondary Road
- 26 U.S. Highway
- 35 State Highway
- S-39 Forest Service Road
- - - Trail
- ▲ Campground
- ▴ Picnic Area
- ❄ Winter Sports Area
- Boundaries

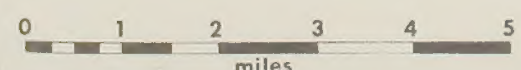
- Planning Unit
- Wilderness
- - - County
- National Forest

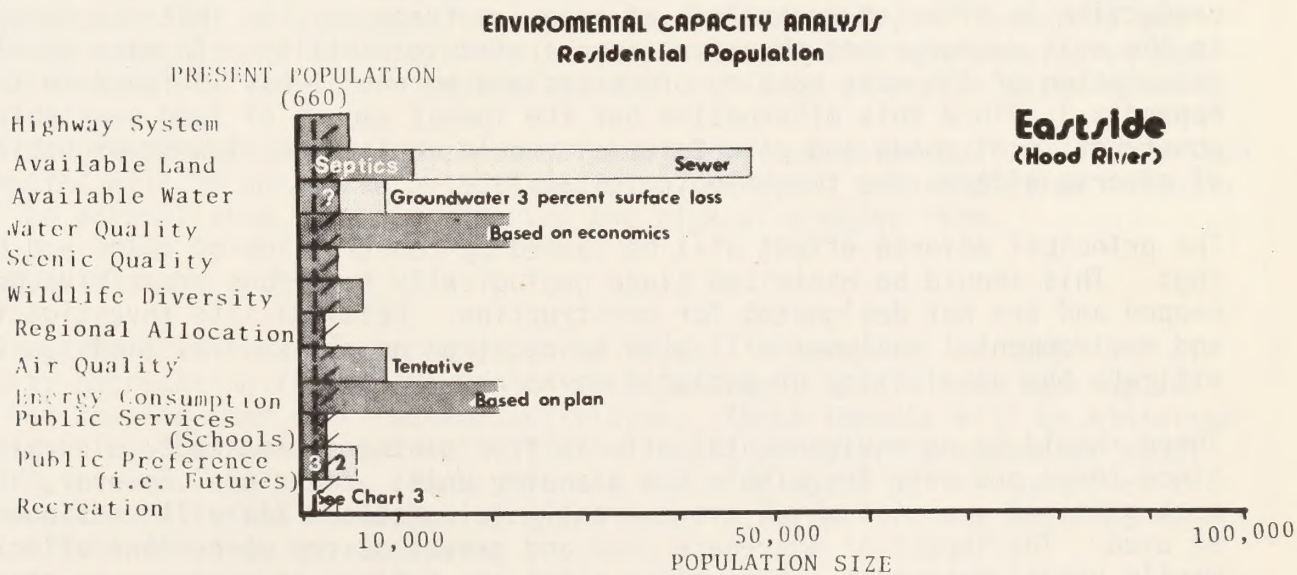
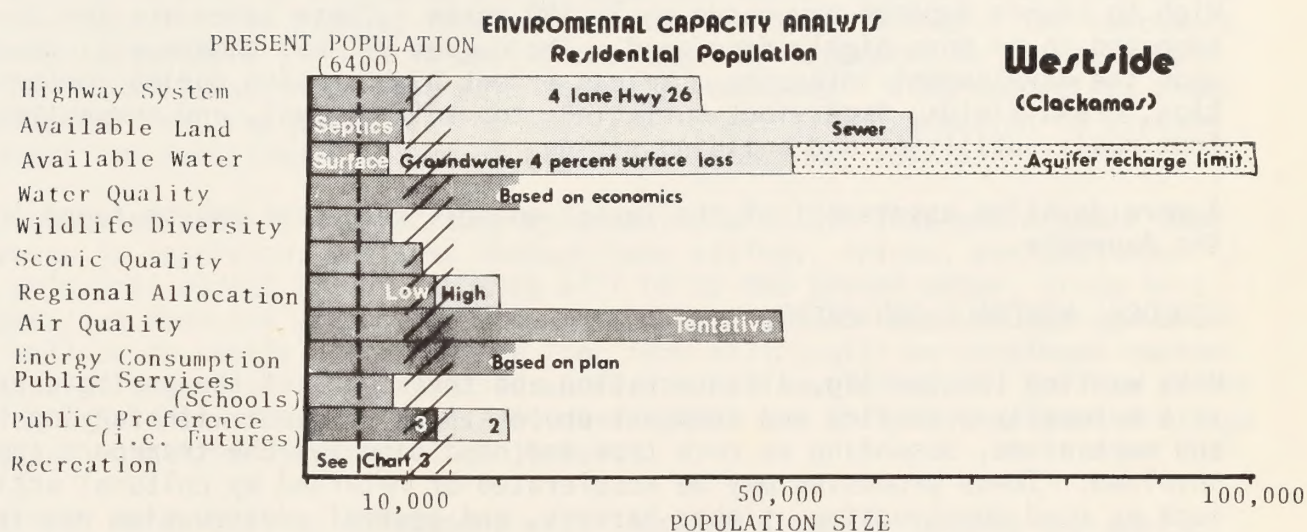


DRAFT ALTERNATIVES

- PROPOSED STATE HISTORIC TRAIL
- PROPOSED ROAD
- PROPOSED BIKE ROUTE
- - - PROPOSED TRAIL
- ▲ PROPOSED FIRESTATION
- ▲ EXISTING FIRESTATION
- ▲ SCHOOL
- COMMUNITY WATER SYSTEM
- COMMUNITY WATER & SEWER SYSTEM
- GEOTHERMAL PERMIT AREA

B





ENVIRONMENTAL IMPACTS - ALTERNATIVE B

SOILS

The impact on soil resources will be lowest on 87,200 acres with slight to moderate erosion from trail and campsite development. There will be some erosion from farm operations and soil compaction around stock watering areas.

There will be erosion from roads and soil compaction from logging systems and construction and developed recreation sites on 59,300 acres. These impacts have been rated low to moderate. The degree of soil damage will depend upon the logging system used.

High to severe impacts may occur on 11,480 acres. These acres are the lands proposed to be more highly developed. The degree of soil damage will depend upon the development intensity. We can expect high erosion during construction, drain fields, impervious surfacing, top soil removal, and compaction from roads, utilities and building siting.

A more detailed assessment of the impact on soil resources may be found in the Appendix.

GEOLOGY, MINERALS AND ENERGY

Mass wasting (weathering, disintegration and transport) of the geologic profile is a naturally occurring and constant process. It proceeds with varying rates and mechanisms, depending on rock type and condition and the transport agent involved. These processes may be accelerated or retarded by cultural activities such as road construction, timber harvest, and general construction requiring excavation and slope loading. The hazard related to these processes depends on the cultural proximity and frequency of exposure in the case of land movement and on stream use in relation to turbidity, bed load and glacial dams. Timber production is affected regardless of exposure frequency, in that the damage is to the soil resource and therefore regeneration capability. (A more complete description of the mass wasting processes and potential may be found in the Appendix.) Since this alternative has the lowest amount of land available for construction of roads and structures, it would contain the lowest probability of adverse effects due to geologic instability.

The principal adverse effect will be caused by construction of roads and buildings. This should be minimized since geologically hazardous areas have been mapped and are not designated for construction. Detailed site investigations and environmental analyses will also be required on all federal lands to further mitigate the possibility of geologic movement.

There should be no environmental effects from mining of locatable minerals, since there are very few within the planning unit. There are, however, several rock pits and quarries which are currently in existence and will continue to be used. The impact of aggregate sand and gravel quarry operations affect primarily visual resources. Excavation sites are subject to performance standards and reclamation plans will be required.

Existing power transmission corridors such as the Bonneville Power Administration line will be retained. No new corridors are planned. Landscape management and revegetation programs by public agencies will be established to make the corridors blend better with the natural landscape.

WATER QUANTITY AND QUALITY

This alternative would result in increase in timber harvest of 16%. Following streamside management directions and using silvicultural prescriptions considered in analysis would not cause a significant increase in turbidity. Temperature levels should not increase beyond 2%.

Minor and temporary nutrient increases have been recorded in the Fox Creek research watershed to the north of the planning unit. Similar increases could be expected with the planned level of silvicultural activities. The increases, although detectable through intensive research, are expected to be negligible and non-significant in meeting water quality standards. With respect to areas of urbanization, the potential for increased chemical introduction to streams is great and localized problems of algae in streams may result.

The number of homes could increase by a factor of 2.3. This would cause some increase in impervious surfaces through home sitings, drives, parking, etc. The principal effect of this housing will be to the ground water, since this alternative does not propose new sewer service areas and most of the new housing will be in septic systems. The long term effect will be continued contamination of ground water. Increased surface runoff would result, but the effect would be held to minor drainages and development can include increased drainage needs as a part of development projects.

Costs for water quality management will increase slightly in both the public and private sectors. Costs increase geometrically to the increase in use.

Continued reliance on surface water systems will affect summer flows and reduce fishery potential and increase summer stream temperatures. This may be mitigated by using ground water systems. Areas available for uncontaminated sub-surface water will have been reduced through reliance on septic water systems.

Fire and floods are natural hazards which will affect water quality. The flood potential will be unaltered by this decision, however, some reduction in fuels will be accomplished, thereby reducing the risk of a major fire.

AIR QUALITY

Alternative B will cause increased noise levels. There will be temporary air quality degradation from increases in smoke and dust levels from burning and log hauling and road construction activities. These impacts will be minimized by requiring that management activities maintain air quality standards equal to EPA level 1. Emissions from autos and furnaces would be the lowest of the three plans but still would be increased by a factor of 1.9. A detailed assessment may be found in the Appendix.

VISUAL RESOURCE

With this plan, 97% of the planning unit would be managed to meet the highest three visual quality objectives (Preservation, Retention, and Partial Retention), with 42% of the planning unit coming under Preservation objective. This would mean a significant upgrading of visual quality objectives as compared to the existing situation (Visual Management System Inventory) (See Summary Impacts). There would be less land in scenic forest than the proposed plan but more wilderness. General forest, with a visual objective of Modification or Maximum Modification, would be reduced to only 1% of total land in the planning unit. Also, there would be fewer acres allocated to housing than the other alternatives, along with a lower projected population.

The major impacts on the visual resources will come from activities such as timber harvesting, road construction, housing and commercial and industrial developments. These impacts will be alleviated in the proposed plan by the confining of commercial and industrial facilities to existing centers, the prohibition of strip commercial development on Highway 26 and 35, establishment and maintenance of tree cutting standards in designated housing areas, the requirement of performance standards in reclamation plans in rock quarry sites, landscape management and revegetation programs on power transmission corridors, etc.

A more detailed comparison of the impacts of the proposed plan and alternatives on the visual resources may be found in the Summary Impacts section of this EIS.

FIRE MANAGEMENT

This alternative maximizes land allocation for outdoor recreation in dispersed areas while maintaining a high percentage of forest to be managed for timber production. Of the three alternatives, this should result in the greatest incidence of fire occurrence as risk will be high in the outdoor recreation zones; and risk as well as hazard will be high in the timber-producing areas, from the time timber is harvested until slash is abated. Effective programs of fire prevention could serve to minimize the incidence of fire starts.

Active fuels management through prompt slash disposal and the construction of appropriate fuel breaks can reduce fire potential on about 78,000 acres to levels equal to less than those occurring before logging.

Under present management for wilderness areas, naturally created fuels build up to often dangerously and unnaturally high levels. The most significant fuel buildup would occur under this alternative. The proposal to study the potential for a surveillance-burning program offers the possibility of lowering fuel accumulations to less dangerous levels in areas where artificial manipulation is not permitted.

The added wilderness envisioned in Alternative B will limit the effectiveness of fire suppression work in these zones of the planning unit. Added emphasis on detection in these areas could minimize this problem by reducing the elapsed time between the origin of a wildfire and its discovery. This, in turn, would allow initial attack to begin on unwanted fires while they

are sufficiently small to permit rapid control.

Low-density development will reduce the fire risk from residential and commercial sources in comparison with the other alternatives. A reduction in the effectiveness of controlling structural fires and an increase in per capita costs for fire protection will accompany this.

FISHERIES

This alternative provides more limited increase in population growth and therefore will not cause significant increases in harassment or water quality degradation. The habitat under this alternative would have little change.

The provision for maintenance of drainage ways, access for stocking and protection of the flood plains should provide an opportunity to continue having quality fishing experiences and limited potential for increasing fishing production.

Improvement of existing sewerage systems under public maintenance will help reduce the existing pollution forms. Small private systems have historically proven to be of varying reliability.

Vandalism rates under this alternative would be expected to remain as they are now or change associated with Portland's growth. Poaching would be expected to continue at about the same rate or higher.

WILDLIFE

This alternative to the proposed action would, by far, pose the least detrimental impacts on wildlife populations in general.

The reduced amount of land available for high yield timber harvest, the greater amount of land to be considered for wilderness study, and especially the reduced numbers of humans the management plan would support, would help provide a larger land base for natural ecosystems. This management regime would provide for habitat for those animals tied to old growth ecosystems (Horn, K. 1975a) and snag habitat (Horn, K. 1975e). This alternative would provide the means to better manage the winter range for big game (Horn, K. 1975c). Timber harvest activities could be used to maintain forage for deer and elk; at the same time the extended protection to wet lands, snag habitat and ecotonal openings would help to retain the overall habitat diversity so important to maintaining the high wildlife variety.

The Oregon Department of Fish and Wildlife should expect less animal damage complaints, due mainly to the lower human population density.

Because this alternative will provide the greatest amount of natural ecosystem diversity (Horn, K. 1975a), animal populations will be more stable (having less tendency to reflect bust and boom dynamics.) Also, this alternative will provide the greatest protection to wildlife species with special classification (i.e., endangered, threatened) and to those species which are endemic (Horn, K. 1975d).

AGRICULTURE

This alternative should have little impact upon the amount of agricultural production in Hood River County. The agricultural land in Clackamas would be available for continued use or conversion to forest land. Though it generally is more suited for timber production, it most likely will be used where the highest economic return will be realized. This alternative will retain the agricultural lands in farming, and the one processing industry at Parkdale in industrial; therefore, little impact is foreseen on agricultural production.

The impact upon the irrigation systems may be more substantial, particularly if the activities in watersheds produce sedimentation. Additional maintenance costs will be felt by the East Fork Irrigation District which obtains its water from the East Fork of Hood River. The Middle Fork Irrigation District, which obtains its water from watersheds outside of the planning unit, will not be affected by these alternatives. Land activities which contribute the most sedimentation are residential construction, road building and timber harvesting.

TIMBER MANAGEMENT

This plan, if fully implemented, will retain 58,500 acres of forest and non-forest land without harvesting and roads. This will be 7,400 acres more than the proposed plan; the scenic forest lands would be reduced by 6,100 acres and the general forest areas would be reduced by 11,700 acres. Portions of the scenic forest lands could be logged by aerial systems. However, this is less than under the proposed plan, since more of the lands will be without harvesting. The following chart illustrates the timber-associated allocations and revenues.

Timber	Units	Federal	State & County	Private
Com.Forest	Acres	27,265	4,440	19,595
Current Yield	Mbf/yr.	11,233	1,830	8,072
Timber value	\$/yr.	1,769,142	283,321	1,249,707
County tax returns	\$/yr.	509,287	212,491	126,192
Direct jobs	Employees	63	10	45
Payroll values	\$/yr.	3,213,000	510,000	2,295,000
High Yield	Mbf/yr.	23,266	3,790	16,723
Timber value	\$/yr.	3,664,289	586,768	2,589,055
County tax returns	\$/yr.	1,054,871	440,076	126,192
Direct jobs	Employees	131	21	94
Payroll values	\$/yr.	6,681,000	1,071,000	4,794,000

Note: The annual harvest estimates are based on managed yield tables and are valid for comparative purposes only. These estimates should not be construed as being an annual harvest quota. This comparison reflects the potential production of the area based on site potential and current technology.

WILDERNESS AND PRIMITIVE RECREATION

Under this alternative, Zigzag Mountain and Mt. Hood Wilderness Study Areas will provide opportunities for the addition of up to 33,500 acres to the existing 14,000 acre Mt. Hood Wilderness. An additional 14,000 acres, mainly in the

Still Creek area, are recommended for roadless recreation. The management direction for this area will be similar to that in the Salmon River backcountry area.

In designated wilderness, trails will be provided to protect the wilderness values. Those trails in conflict will be abandoned. Under Alternative B, a policy of surveillance burning may be adopted in wilderness areas in order to perpetuate the natural wilderness ecosystems, and as a means of preventing the abnormal accumulation of forest fuels.

The primary effect from the additional wilderness areas proposed under Alternative B will be in the area of the removal of this land base from timber harvesting. This will be offset, though, by the increased amount of recreation opportunities available, as well as the recreation based revenues which will be generated.

RECREATION

Under Alternative B, approximately 6,600 acres will be designated for developed recreation and downhill skiing. This will include some facility expansion at Multnorpor, Ski Bowl, Timberline Lodge and Mt. Hood Meadows. No additional accommodations are considered at the Mt. Hood Meadows and Cooper Spur areas under this alternative.

Because of the lower expected population user levels under Alternative B, the quality of recreation experiences is better than Alternative A, but not quite as good as the Proposed Plan. The best quality experiences can be expected under the activities of hunting, camping, scenic viewing and mountaineering. The poorest quality experiences can be expected in the activities of skiing and resort activities, golf and picknicking, primarily because of the lack of development. Other activities may be rated on an intermediate scale.

Low visitor day use may be expected in the activities of skiing, camping, driving for pleasure, water sports, mountaineering, resort activities, golf and picnicking under Alternative B. Higher uses may be expected in activities of scenic viewing, hunting and fishing. This plan would provide the greatest proportion of day use of any of the alternatives, while providing the least amount of recreation facilities.

Because this plan does not attempt to concentrate recreation use which makes for efficient use of services, it probably would be the most difficult to administer.

In summary, this plan would provide the highest quality of recreation of any of the alternatives. All present values would be retained with little risk of irreversible damage to the recreation attractions.

STATE HIGHWAYS

This alternative would only require significant improvement in the Brightwood-Zigzag section, probably requiring an improved two lane section plus a passing lane and turning lane. This would require the right-of-way in the Dwyer Corridor on the north side of the existing highway, along with the resultant elimination of some of the large old-growth trees.

FOREST SERVICE ROADS AND TRAILS

There are no major Forest Service roads proposed under Alternative B. While there are approximately ten miles of roads proposed under this alternative, there will be fewer biological impacts because there will be fewer spur roads built. The roads which are proposed are primarily extensions of existing roads and in most cases very short sections needed for completing an existing system. The proposed roads occur only in terrain and soil types which are suitable for road building. Approximately 29 miles of trails are proposed under this alternative. This trail system would not include a bicycle trail or a low elevation trail. The trails would be signed to avoid user conflicts.

The primary biological impact from the additional roads and trails would be one of increasing foot and vehicular traffic through areas which were previously less impacted. This would produce wildlife harassment and its resultant reduction in wildlife diversity, the potential detrimental impact of foot traffic on vegetation, soil compaction, blowing dust, temporary noise and some possible soil movement. Social benefits would occur from the development of the roads and trails system. Scenic values may be improved through the revegetation and reshaping of some existing roads, as well as new proposed roads. The additional trails proposed, while fewer than under the Proposed Plan or Alternative A, would provide a means for dispersing recreation use over more area, as well as providing additional recreation facilities for an increasing need.

ENERGY CONSUMPTION

Because of the reduced population levels posed under Alternative B, energy consumption (gasoline, home fuels) will be less than the Proposed Plan or Alternative A. It will, however, still increase by a factor of 2.0. (A detailed assessment may be found in the Appendix.) It also reduces the feasibility of mass transit, which will continue the ineffective use of energy for transportation.

This alternative rules out the potential for geothermal use

HISTORIC AND ARCHAEOLOGICAL SITES

The proposed plan will not affect, either favorably or adversely, those sites now on the National Register of Historic Places, recommended additions or potential sites. All projects resulting from this plan will be evaluated for their effects on identified sites or areas in consultation with the State Historic Preservation Officer and, if necessary, the Advisory Council on Historic Preservation pursuant to "Procedures for the Protection of Historic and Cultural Properties" (36 CFR, Part 800). The Proposed Plan maintains the opportunity for discovery of additional sites through reconnaissance and/or intensive survey as part of project plans.

In compliance with Section 2 of Executive Order 11593, the plan will not result in the transfer, sale, demolition or substantial alteration of lands seemingly with characteristics for future nomination to the National Register of Historic Places.

In compliance with Section 101 (b)(4) of the National Environmental Policy

Act and Section 1(3) of Executive Order 11593, the proposed plan will not affect, either favorably or adversely, the preservation and enhancement of non-federally owned districts, sites, buildings, structures and objects of historical, archaeological, architectural or cultural significance. The Clackamas County Zoning Ordinance for Recreational-Residential (R-R) District, Section 22, states that effects of historic properties will be determined and evaluated as a part of each major development plan within this zone.

SEWERAGE

The upgrading of sewage collection systems with existing problems would be required under this plan. Some expansion of service areas west and north of Bowman's Golf Course would occur. Sanitary systems at Parkdale and Government Camp could be expanded to serve present commitments. Septic systems on suitable soils would be allowed in other housing areas but would be subject to meeting Department of Environmental Quality standards. Under Alternative B, higher density developments will occur in Welches, Timberline Rim, and Zigzag Village areas. Since this alternative has the smallest sewered area of all, it will have the least effect on ground water quality. This alternative would have the least construction cost of all the alternatives, and would have the least amount of construction impacts.

For more detailed assessment of the impacts of the proposed sewerage system, please refer to the Summary Impact section as well as the Appendix.

DEVELOPMENT AND GROWTH

The level of residential growth and development provided under Alternative B is 1.8 to 2.3 times the present population (seasonal and permanent).

Compared to the Proposed Plan, the potential environmental and social impacts of Alternative B described would be diminished in magnitude as well as extent. While allowing for growth and improvements in areas with known problems or existing urban services, it nevertheless tends toward maintaining the area with its present image and character. Reclassification of land would be necessary for a major share of the planning unit. The costs of serving such a level of development is estimated to be \$28 to \$34 million, which includes direct capital as well as operating expenses for needed public facilities but not residential construction or land costs. Regional Year 2000 expectations for the planning unit would still be accommodated or provided for, but at the lower projection level. Housing opportunities for moderate income residents may be somewhat restricted price-wise, but this has yet to be demonstrated.

See summary for more quantitative description of Alternative B's growth and development effects.

ECONOMY

The general nature of economic activity changes can be reasonably predicted under this plan. Expansion of recreation area (wilderness, primitive recreation) and limited expansion of use at developed sites (ski areas) will both generate additional economic activity with the latter use being most significant. Existing zoning along Highway 26 will allow increases in revenue, employment and the permanent population.

It is reasonable to assume these increases would be proportional to existing market linkages between permanent demand, seasonal demand, employment and commercial use. Straight line projections to indicate relative influence of the three sectors are generally valid. Secondary economic impacts of growth -- effects of economies of scale -- would be minimal. In this plan, commercial-economic activity might have the following level. (Assumptions for estimates are described in the Appendix.)

PRELIMINARY ESTIMATES OF VALUE OF COMMERCIAL-RECREATION ECONOMIC ACTIVITY IN MT. HOOD PLANNING UNIT 1/

	<u>Commercial-Recreation</u>
Total Value (All revenue)	\$21,500,000 to 26,000,000
% of all revenue	85%
Total wages	
% of all wages	82%

Source: Prepared by Mid-Columbia Economic Development District.

1/ See Summary Section for comparison of commercial-recreation activity with forestry and agriculture activities.

ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The planning process is designed to safeguard against adverse environmental effects through the determination of the capacity and suitability of the land to produce specific goods and services. (See Land Suitability Analysis and Environmental Capacity Sections of this EIS.) However, the proposed management and its alternatives would result in some unavoidable adverse environmental effects.

A. Physical Effects.

All of the land categories of the various alternatives have some adverse impact on soil resources. These impacts range from low to severe. Slight to moderate erosion would result from trail and campsite development and farm operations. Soil compaction will occur around stock watering areas. High to severe impacts may be realized during construction of housing and commercial facilities. Timber operations will cause erosion from roads and there will be soil compaction from logging systems and logging system used. In regard to developments, the degree of soil damage will depend on the degree of development intensity, with the greatest intensity (i.e. commercial) causing the greatest damage. Comparatively speaking, Alternative A will have the highest impact on soil resources and Alternative B the lowest. The proposed plan has a moderate impact on the soil resources.

Geologic hazard mapping has attempted to locate potential problem areas which will be studied in detail prior to road and timber sale design. Housing areas were not designated in known geologic hazard areas. In those areas where management activities and developments occur, modification of the present landscape will have an adverse effect on the visual quality for some visitors. Most significantly, this will occur in areas where timber harvest and road construction and commercial facility development are not taking place. This may make certain of these areas undesirable for people disliking manmade alterations of the landscape. The use of visual quality standards on both public and private lands will help minimize these effects.

Fire management activities under all alternatives will have some adverse environmental effects. The visual impact of scorched trees and blackened earth will be an unavoidable effect. Smoke too, has a temporary disagreeable effect on the visual quality of the environment.

Under all alternatives, localized increases in runoff will occur with the installation of impervious surfaces. This measurable impact is limited to urbanizing areas. Adequate engineering planning and design can make such affects negligible. The higher growth levels of Alternative A will most likely cause some accelerated channel erosion and enlargement.

The impact of sediment and chemicals introduced to streams in the urban areas remains the biggest threat to water quality. Recycling systems or biodegradable properties can lessen the potential impact of urbanization contemplated in Alternative A. Sedimentation impacts can similarly be

controlled if measures are employed during construction to prevent erosion. Surface water diversions for domestic purposes would diminish streamflows and result in deteriorating water quality.

Geothermal development has a high potential to cause water quality problems anywhere in the planning unit from soil and slope disruption and waste water disposal.

Under all of the alternatives there is a potential for increased sedimentation in irrigation systems serving agricultural lands. Land activities which contribute the most sedimentation would be residential construction, road building and timber harvesting. Alternative A, which has as a feature the highest residential population and conversion of some agricultural land to housing and would cause the most sedimentation. Alternative B would have the least amount of sedimentation, while the proposed plan would be intermediate.

Timber harvest and associated road construction will cause soil disturbance while the work is being done. The activities of all alternatives will cause localized soil compaction and erosion. There is a potential for landsliding in cutslope and timber harvest units. Geologic hazard mapping however, has attempted to locate potential problem areas which will be studied in detail prior to road and timber sale design. Timber harvesting will also change the landscape character. Log hauling will increase traffic and noise near residential areas. Timber harvesting will also adversely affect wildlife species requiring snag habitat. Proper logging systems, careful design of timber sales, avoidance of critical soil areas and erosion control measures should serve to reduce adverse effects on soil productivity, water quality and the aesthetic resources. Water quality monitoring would continue to provide information and data on sedimentation and turbidity.

B. Biological.

Since all management alternatives point toward further resident and transient human populations in the study area from what exists today, urban development and intensive nonurban uses for commodity production can be expected to cause insults to fisheries in subtle, almost indiscernable ways. Without the constraints and guidelines suggested in the proposed plan of action, capability to satisfy fish resource demands and its attendant recreation opportunities will be gradually lost. There will be increasing interference with water quality from increase in runoff, disrupted or paved land surfaces.

Provision of wild trout angling opportunities will be diminished with any alternative offered, and in certain instances could lead to restrictions designed to protect the opportunity through rationing its use. Increased human pressure will also have impact on present and potential use of the unit's streams by anadromous fish. Erosion of aquatic habitat will be partially responsible; but at human population levels projected for the future, the capability to provide a summer run steelhead fishery in the planning unit may be forsaken from the inability to protect adult fish

from overfishing, poaching and human harassment. Because of their lengthy exposure to low summer streamflows prior to spawning, both summer steelhead and spring chinook adults can be extremely vulnerable to human harassment.

Ramifications of the alternatives therefore, appear to be a matter of assessing the degree of expected impact nearly all of which is going to be unfavorable to fish resources, some directly and some indirectly.

The major impact to the planning unit's wildlife will be the inevitable increase in people density. This population increase, along with facility development (i.e. residential, recreational, transportation systems, etc.) will result in vegetative layering, hydrosere and general vegetative trampling and removal. Wildlife will be subjected to both primary and secondary harassment impacts (Horn, K. 1975b), especially in high residential areas and popular recreation sites such as the alpine biome (especially the south side of Mt. Hood near Timberline Lodge and the associated Pacific Crest National Scenic Trail, Trillium Lake area, Mt. Hood Meadows, etc.).

These impacts will be especially critical in the alpine biome, where vegetative recovery is low and ecosystems are extremely fragile. Though, perhaps not as severe as in the alpine biome, critical impacts will also be placed upon low elevation (2000 feet and less) big game winter range.

Not as critical in this planning unit as the increasing human population density, timber management activities will have an impact on some species. The greatest impact will be on snag habitat (Horn, K. 1975e) and to a lesser extent, hydrosere and the few pockets of old growth timber in commercial forest lands.

Current research is reflecting a growing number of organisms dependent on or significantly using old growth ecosystems, hydrosere and especially snag habitat. For example, important game animals and fur bearers such as cougar, deer, bear, wolverine and marten all appear to be closely associated with (significant users of) old growth habitat on the Mt. Hood National Forest. In certain westside areas of the forest, deer and cougar appear to be dependent on old growth ecosystems as an important element of their home range.

While most of the fauna using snag habitat are nongame animals, their value to mankind is nonetheless as important as game animals. For example, most of the animals using and needing snag habitat are predators of forest insects and/or rodent pests which often cause considerable economic loss of forest wood products and scenic vegetation -- so important to recreational areas. With the increased pressures against the use of chemical agents to control forest pests, the value of snags, plus other habitats needed by these animals increases (Baldwin, P. 1968a,b; Beebe 1974; Massey and Wygant 1975).

Tradeoffs involved are dismal truths. Animals are not born free, but are captives of their environment and are dependent on it. When their environment is destroyed, they must go -- to nowhere. Those species which have

the highest value to wildlife viewers (Horn, K. 1975f; Payne and Degraff 1975) and perhaps mankind in general are critters with the highest degree of specialization (Horn, K. 1975g), hence will be the first to go.

C. Social and Economic Effects.

Under Alternative B, an additional 14,000 acres is designated for roadless recreation. If this area is allocated to timber harvest as proposed under Alternative A and the proposed plan, this could foreclose the future option for roadless recreation. This could be considered an adverse effect by those who would advocate roadless recreation for these areas.

Since all of the alternatives provide for some expansion of recreation facilities, we can expect some adverse, unavoidable impacts on the environment. This will occur mainly in the areas of soil compaction, landscape alteration and lack of quality recreation because of the congestion of people. The adherence to visual quality standards and utilization of proper design and recreation site construction should alleviate the majority of these impacts.

Highway modifications under all of the alternatives would create some adverse environmental impacts. Under Alternative A, the widening of the existing four lane highway between Cherryville and Brightwood would require taking additional right-of-way in a presently rural residential area. Under the proposed plan and Alternative B, expansion of existing two lanes to four lanes between Brightwood and Zigzag could have a substantial impact on the large old growth trees adjacent to the highway and therefore, may have a significant effect on the visual experience of the highway user. Comparatively speaking, Alternative B would have the least adverse environmental impacts from expansion of the transportation system. The proposed plan and Alternative A both call for the installation of approximately 52 miles of trails in the planning unit. These could produce wildlife harassment and its resultant reduction in wildlife diversity, the potential detrimental impact of foot traffic on vegetation, soil compaction, the potential for blowing dust and some temporary noise and soil movement. Alternative B would have only 29 miles of trail built and would therefore, result in fewer impacts on the environment, but perhaps a reduction in recreational quality due to the congestion of more users on less trails. These adverse effects would be mitigated because of the social benefits which would occur from development of those trails. The scenic values may be improved through the revegetation and reshaping of existing and proposed roads and the dispersion of recreation use over more area on additional trails.

All of the alternatives in this plan call for increased population levels. With this goes increased energy consumption which could be considered an adverse environmental impact due to the emissions which would be generated by both residential and automobile use. Comparatively speaking, Alternative B would produce the least amount of emissions due to its lower population levels. However, it also reduces the feasibility of mass transit, which would continue the ineffective use of energy for transportation which currently exists.

Alternative B rules out the potential for geothermal use in the planning unit. This could be considered to have considerable adverse consequences since it could possibly increase reliance of the planning unit on outside energy sources. Both Alternative A and the proposed plan permit geothermal development, subject to some development performance requirements. The development of geothermal resources in the planning unit could change the area from its present condition as an energy consumer to an energy producer.

The construction of sewage treatment plants and increased need for sewage disposal in the planning unit under all of the alternatives will create some adverse effects. Treatment plants may become a dominant feature of the landscape unless designed with a generally low profile and screened. The long term impact of the treatment facilities will be that the land use will be dictated for the life of the plant. Construction of the irrigation fields which may be proposed will cause some influence on the ground water tables of the area, in that the water that does not evaporate at the time of application where it has not transpired from the vegetation will percolate downward and join the ground water. This effect will be alleviated by the installation of irrigation fields in proper soils. The sludge solids which will be produced by treatment plants will have to be disposed of in landfill sites. The construction of sewage treatment facilities involves all of the adversities of clearing, grading, noise and inconvenience. Unprotected land may erode during construction but this can be minimized with proper drainage control. Dust during construction will be a problem also, but this will be limited to the construction site and should not cause a nuisance to the adjacent areas. In areas that call for forced mains, there may be some slight odor problems. Because Alternative B has the lowest population levels, it would also have the smallest sewered area and therefore, the least effect on ground water quality, construction cost and the least amount of construction impacts.

If Alternative B were to be implemented, it could have some impacts economically. Compared with Alternative A which has the highest acreage of land in commercial timber production, the timber value would decrease \$576,078. The county tax returns would be reduced by \$286,209 and the direct jobs would be reduced by 21 employees. Payroll values would be decreased by \$1,071,000. (These values and numbers are based on the high yield potential of the intensive management and not current yield.) Compared with Alternative A, the proposed plan will result in slight reductions in these economic values. (See Summary Impacts Section.)

All of the alternatives provide for residential growth ranging from 1.8 to 8.5 times the current population (seasonal and year around). Irrespective of the alternatives, additional growth will have a series of adverse environmental effects. These effects are physical, biological, social and economic. The difference between the alternatives are largely a matter of degree, magnitude and duration of impact. Alternative A would have the most severe impacts. The proposed plan best mitigates the adverse effects from the standpoint of the overall broad spectrum of activities. Alternative B is a strong mitigative plan due to its reduced densities, lower development scale and cost requirements. Land use ordinances and management policies which support the adopted plan and additional planning on a project or functional scale (i.e. sewers, Highway 26, community designs) would further minimize the adverse impacts of growth and development.

Short Term Uses/Long-Term Productivity

RELATIONSHIP BETWEEN SHORT TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

The foundation of the land use planning process for the Mt. Hood Planning Unit was the analysis of the suitability and capacity of the land to support various uses and activities in the long range. The suitability characteristics formed a basis for all alternative plans, considering also the public needs and demands and the various laws and policies under which the Forest Service, Bureau of Land Management, State of Oregon, Clackamas and Hood River Counties must operate.

The proposed plan is considered to be the plan which would best meet the local, regional and national needs and demands on both a short term and a long term basis.

Generally speaking, the scenic quality of the planning unit will be protected through adherence to visual quality standards. The harvesting of timber through clearcutting will have some short term adverse visual impacts which will be minimized through proper sale design. This will, in the long run, produce a visual diversity of texture and shape.

All of the alternatives have wilderness study areas and therefore, have the potential for creating open space and solitude for future generations. The conversion of these wilderness study areas to timber producing areas should they not meet the standards for wilderness would have the long term effect of eliminating them as unroaded open space areas for future generations.

The wildlife of the planning unit will be impacted in the long run no matter which alternative is selected because of the increased population levels which will reduce the wildlife diversity. Alternative B would have the least effect because it retains the lower human population levels.

Because of the high population levels possible under Alternative A, the character of the water quality will be affected in the long run. These impacts, primarily chemical, will be in streams occurring in the zones proposed for development. Petroleum products introduced to storm drains and pesticides introduced to inhabited zones are the primary sources. The trend toward rapidly degradable pesticide products may lessen the long run consequences. Many of the lubricating oils are acquired in over-the-counter sales and after use, find their way into streamcourses. This can significantly impact water quality, the impact proportional to the degree of urbanization. More extensive use of recycling systems could effectively mitigate these adverse effects.

The short term effects on fisheries management through each alternative will be a limited loss in productivity, least significant being Alternative B and most significant Alternative A. The long term productivity would be highest with the proposed action, about the same as the present situation with Alternative B and reduced with Alternative A.

A variety of recreation opportunities will be available under each of the alternatives. Designation of use areas (i.e. off-road vehicle areas, horse trails, etc.) will reduce user conflicts and help protect against soil disturbance,

water quality degradation and wildlife harassment. In turn, the capability of the land to sustain various recreation uses will be maintained. The conversion of existing timber producing areas to exclusive recreational uses will have a long term effect on the harvest levels within the planning unit. These may be offset by increased revenue generated by recreation use.

The proposed plan and alternatives recognize maintenance of water quality as a primary management objective. Some activities such as timber harvesting, road building, the development of commercial facilities and residential sites, etc. may have localized effects on water quality. However, all activities will be designed to maintain a continuous supply of high quality water over the long term.

Under the proposed plan, many of the areas presently designated for harvest will be entered earlier under intensive management programs to permit stands of trees to grow at a more rapid rate. The long term effect of this program will be further increases in yield, jobs, greater returns in value, taxes and payroll. Under Alternative A, much of the prime forest land is located on private lands and the long term effect of converting these properties to housing further diminishes the potential long term yield of timber. The yield may be further reduced due to conflicts between logging activities and residences adjacent to forest properties. Alternative B has reduced conflicts in harvesting and retains some of the highly productive forests in the lower Clackamas corridor. The long term effect under this plan will be a gradual increase in yields due to improved utilization and technological development.

Protection of the planning unit from forest fires and commercial and residential fires is a primary emphasis in management. Forest fuels management would be an ongoing activity designed to prevent a major conflagration over the long term. In turn, this would maintain the productivity of the entire area to supply high quality water and support sustained timber production.

Because of slash burning, road construction, residential and commercial construction and timber harvesting, air quality will be temporarily degraded by the increased smoke, noise and dust levels but this will not be a permanent effect.

The proposed highway improvements which are called for under each of the alternatives have the effect of reducing the amount of lands available for commercial timber production in the long run as well as the removal of rock sources and mineral aggregate needed to build the roads.

Should geothermal energy be developed within the planning unit, the long term effect would be increased energy production for the planning unit and a decreased dependence on outside energy sources. Gasoline usage and domestic consumption of home fuels will increase under each of the alternatives because of the increased population levels. This increased fuel consumption could have the long term effect of reducing the energy sources available for future generations.

Providing sewage collection treatment facilities for an area will constitute a irreversible, long term economic and land use commitment, not only for the present residents of the areas but for future generations as well. This is so because of the large amount of capital which will have to be recouped within the

area serviced. This will in turn, necessitate the land being developed to more concentrated forms of use than the timber, rural housing, etc. than the land is now supporting.

Any significant increases in traffic volumes will result in a need for expansion of some sections of U.S. 26 as noted above. If some degree of growth in local population, numbers of visitors and traffic volumes is regarded as unavoidable, the need to choose between lower levels of service and an expanded highway facility is also unavoidable. Given sufficient resources and funds, the policy of the State Transportation Commission is to provide acceptable levels of service, take into consideration increases in alternative transit modes. For U.S. 26, this is likely to mean expansion of the highway as well as providing incentives for the use of bus service.

1. Any widening of the highway in the Wildwood-Welches Road (Zigzag) Section will adversely affect the Dwyer Forest Corridor. This effect will be proportional to the intensity of the plan chosen (greatest for Alternative A; least for Alternative B).
2. Highway widening adjacent to Tollgate Park, one mile east of Rhododendron, would require clearing of forest land across the highway from that historical site, since the park is located in a relatively narrow strip between the existing highway and the Zigzag River.
3. Removal of existing roadside vegetation for highway widening and slope improvement will adversely affect the Forest Service's existing Foreground Management Zone. In many cases, most of this adverse affect will only be temporary, pending reestablishment of natural cover.
4. Any relocations of businesses and revision of local circulation patterns and access in the Wildwood-Rhododendron population centers are likely to have some adverse effects in individual relocation cases, but these are generally compensable. Well planned revisions in existing circulation are likely to produce long term benefits which will far exceed the temporary inconveniences.

Residential growth and development is considered to be a long term use of the environment. The degree of commitment is dependent upon the alternative allocations.

Irretrievable Resource Commitment

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Increased recreation use, timber management, road construction, commercial and residential development in the planning unit will result in the loss of some wildlife and plant species through alteration of habitat. Probably the first ecosystem to be affected will be the alpine biome, especially the area around timberline. When habitat conditions of this ecosystem are altered to the point where the present wildlife species can no longer seek a living there, they will disappear from the planning unit in the Mt. Hood National Forest. (A detailed list of the plants and animals which may be most directly affected may be found in the Appendix.)

The principal irretrievable commitment of resources which applies to the highway system under any of the alternative plans is the further depletion of the limited mineral aggregate sources in the planning unit. (See "Mineral Aggregate" in the section on environmental capacity.) Mineral aggregate is required for all highways and much building construction. That which will be used in state highway construction will not be available for county and Forest Service roads. It is doubtful that this resource is any less limiting outside the planning unit and hauling costs become prohibitive in long distances.

Development of a highway-oriented transportation system assumes that suitable fuels will continue to be available at acceptable costs, and that mode preferences will not shift significantly in the near future. Whether or not these assumptions are entirely correct, the proposed highway investments envisioned for each alternative would constitute a commitment to the continuation of a highway-oriented system; a commitment which if not irreversible, is certainly resistant to reversal.

Concerning fisheries, the potential for added housing under Alternative A in the Sandy River corridor will cause some loss in habitat through the combination of added water consumption during summer periods, added human litter and waste and added harassment. The effects of Alternative B and the proposed action should not cause irreversible and irretrievable losses.

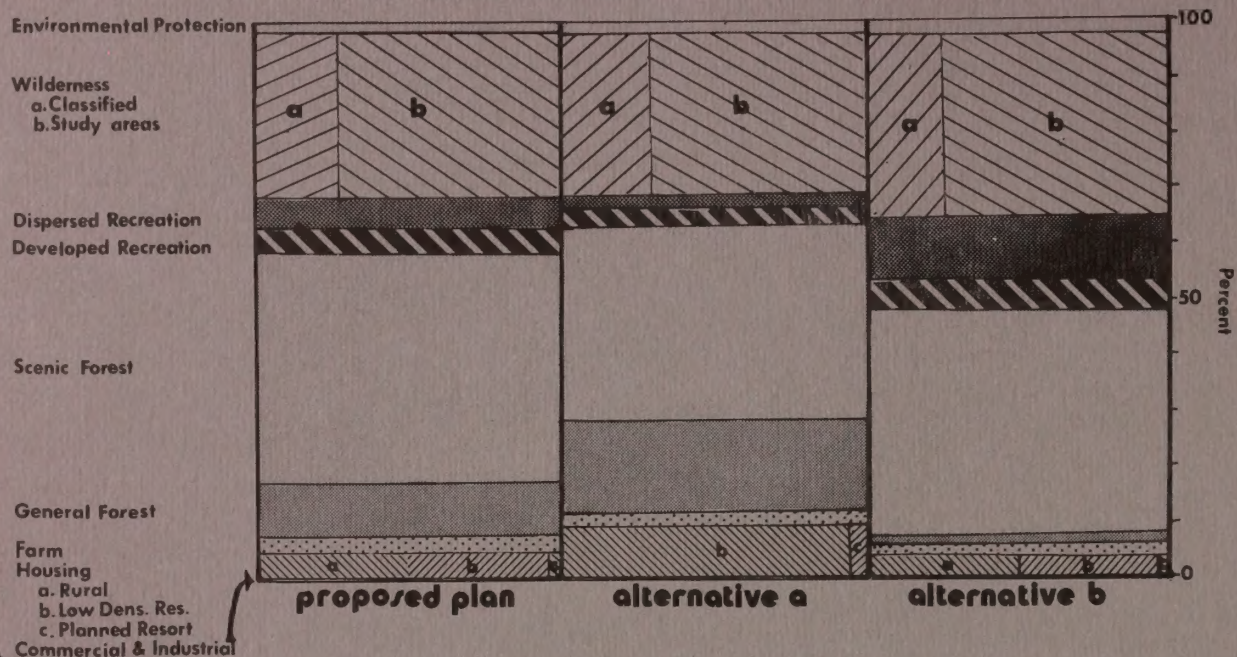
The development of commercial and residential facilities throughout the planning unit will curtail the option in the long term for timber production, wildlife wintering areas and recreational uses. With the residential growth allocated by the respective alternatives, soil disturbance and coverage will be largely irreversible.

Under the proposed plan and Alternative A, the 14,000 acres designated in Alternative B for roadless recreation would be committed to commercial timber harvest. This would foreclose the option of roadless recreation for future generations.

Summary of Effects

FIG. 16

ACREAGE ALLOCATIONS BY ALTERNATIVE



SUMMARY OF EFFECTS

This section provides graphic and tabular comparisons between the Proposed Plan and the Alternatives. The information is presented in two sections; first by individual topics and secondly by general assessment. Following this is a "Goals Analysis" which portrays the relationships between the planning unit goals and the State LCDC goals.

MT. HOOD PLANNING ACREAGE ALLOCATIONS BY LAND USE ALTERNATIVE - DRAFT EIS

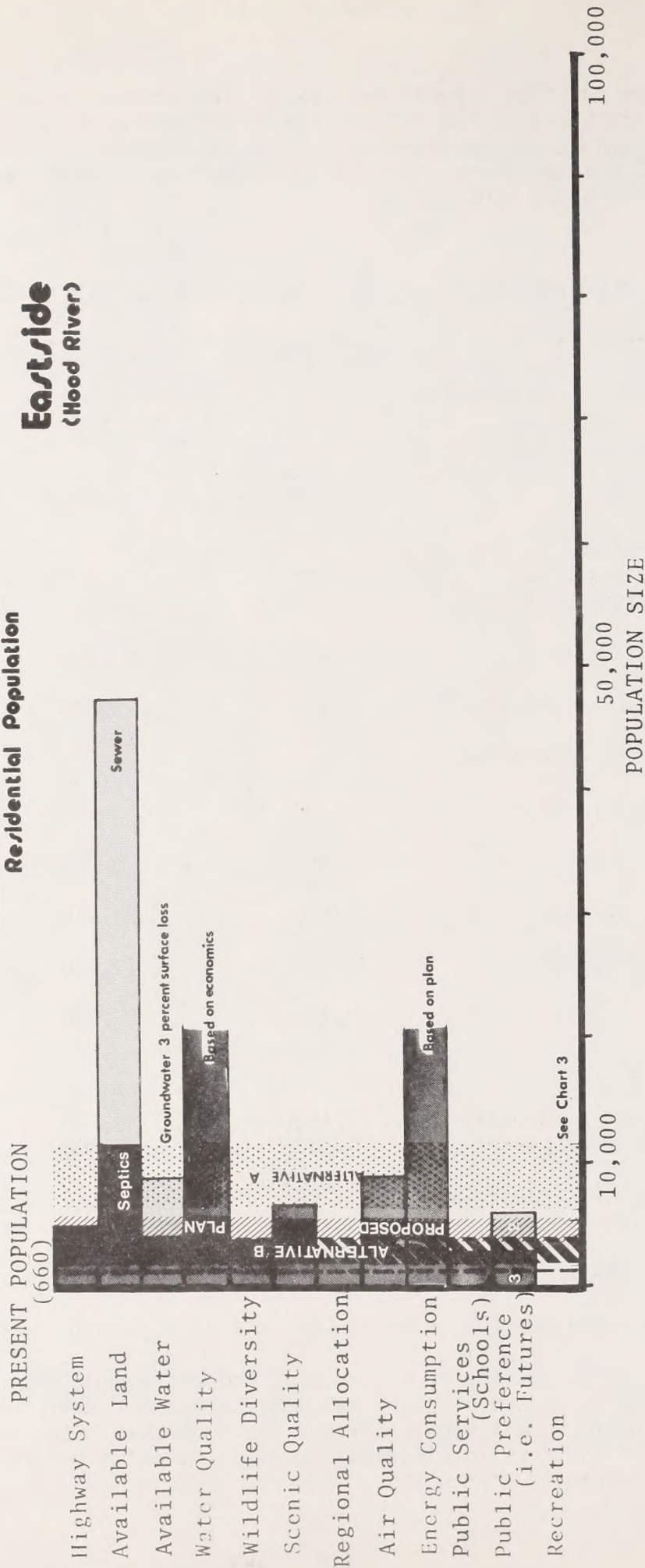
<u>Area Designation</u>	<u>Alternative A</u>	<u>Proposed Action</u>	<u>Alternative B</u>
1. Environmental Protection ^{1/}			
a. Floodplains			
b. Other areas			
TOTAL	2,600	3,600	3,600
2. Wilderness			
a. Classified	14,000	14,000	14,000
b. Study area	33,500	33,500	40,900
TOTAL	47,500	47,500	54,900
3. Dispersed recreation	4,500	8,700	25,200
4. Developed recreation			
a. Ski areas	6,100	7,600	6,100
b. Other areas	700	800	500
TOTAL	6,800	8,400	6,600
5. Scenic forest	55,000	63,800	57,700
6. General forest	25,800	13,300	1,600
7. Farm	3,500	3,800	3,500
8. Housing			
a. Rural		4,700	2,400
b. Low residential	11,700	3,700	2,200
c. Planned resort	500	400	200
9. Commercial, Industrial and Special Sites	95	80	80
GRAND TOTALS	158,000	158,000	158,000

Note: Data may not add to totals because of rounding.

^{1/} These acres consist of floodplains and wetlands within Clackamas County and floodplains on federal lands. Wetlands on federal lands and both wetlands and floodplains in Hood River County are not protected under present plans to the same extent as those in Clackamas County. Map 18 shows all these areas as having some degree of protection.

ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

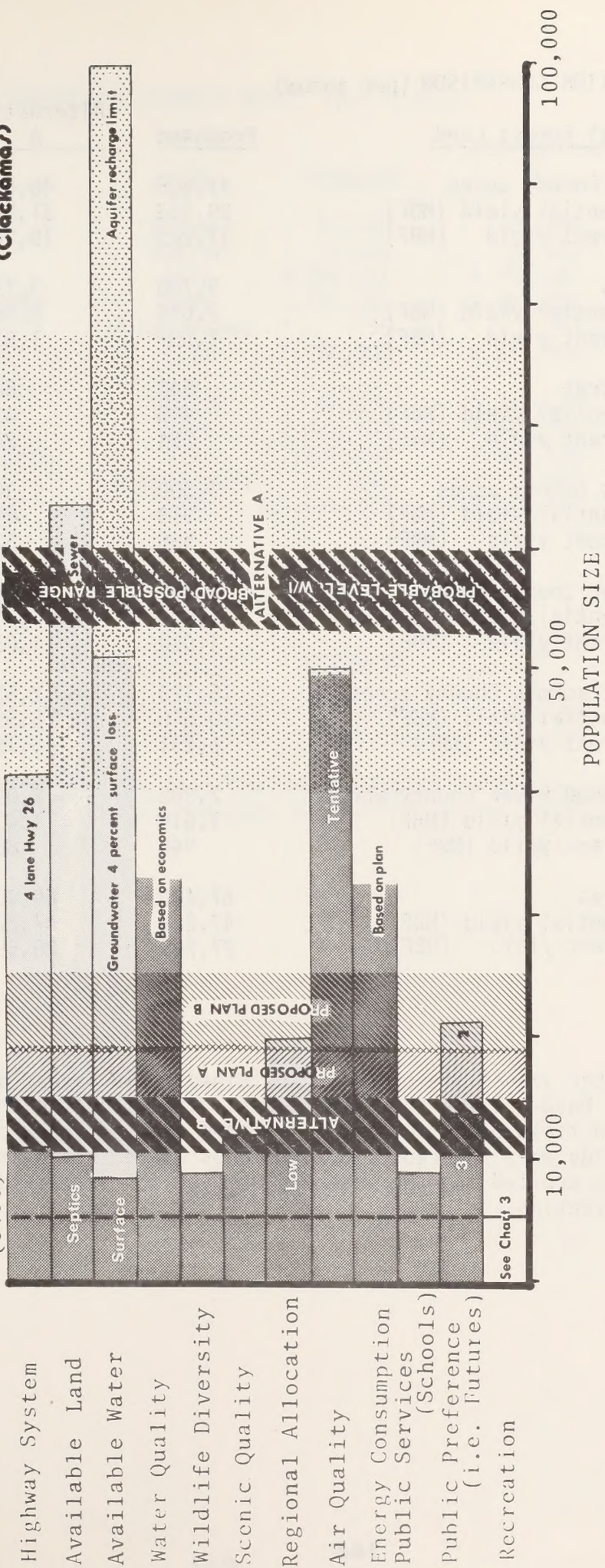
Eastside
(Hood River)



ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

PRESENT POPULATION
(6400)

Westside
(Clackamas)



TIMBER ALLOCATION COMPARISON (per annum)

<u>Commercial Forest Land</u>	<u>Proposed</u>	<u>Alternative A</u>	<u>Alternative B</u>
National Forest acres	41,805	46,601	23,535
Potential yield (MBF)	29,333	31,945	20,082
Current yield (MBF)	17,223	19,200	9,696
BLM acres	3,730	3,730	3,730
Potential yield (MBF)	2,615	2,558	3,184
Current yield (MBF)	1,537	1,537	1,537
Oregon acres	640	640	640
Potential yield (MBF)	449	439	547
Current yield (MBF)	264	264	264
Clackamas County acres	1,300	1,300	1,300
Potential yield (MBF)	913	892	1,110
Current yield (MBF)	536	536	536
Hood River County acres	2,500	2,500	2,500
Potential yield (MBF)	1,754	1,715	2,133
Current yield (MBF)	1,030	1,030	1,030
Private Clackmas County acres	15,123	12,539	15,385
Potential yield (MBF)	10,610	8,597	13,130
Current yield (MBF)	6,231	5,164	6,338
Private Hood River County acres	2,302	2,090	4,210
Potential yield (MBF)	1,615	1,433	3,593
Current yeild (MBF)	948	861	1,734
Total acres	67,400	69,400	51,300
Potential yield (MBF)	47,289	47,579	43,779
Current yield (MBF)	27,769	28,592	21,135

Note: Timber values are based on sustained yield levels developed in Mt. Hood-Willamette yield tables. Yield coefficients were contingent upon field condition and calculated with a linear program model. Yields were reduced by 50% on lands where "retention" visual standards were applied and the area was removed for streamside management protection.

TIMBER MANAGEMENT COMPARISON SUMMARY SHEET (per annum)

<u>Timber</u>	<u>Units</u>	<u>Proposed</u>	<u>Alternative A</u>	<u>Alternative B</u>
Commercial Forest	Acres	67,400	69,400	51,300
Current yield	MBF/Yr	27,769	28,592	21,135
Timber value	\$/Yr	4,329,221	4,456,663	3,302,170
County tax return	\$/Yr	1,125,328	1,183,842	847,970
Direct jobs	# Employees	156	160	118
Payroll values	\$/Yr	7,956,000	8,211,000	6,018,000
High Yield	MBF/Yr	47,289	47,579	43,779
Timber value	\$/Yr	7,372,407	7,416,190	6,840,112
County tax return	\$/Yr	1,837,354	1,907,348	1,621,139
Direct jobs	# Employees	267	267	246
Payroll values	\$/Yr	13,617,000	13,617,000	12,546,000

FISHERY COMPARISON (per annum)

	<u>Present</u>	<u>Proposed</u>	<u>Alternative A</u>	<u>Alternative B</u>
Anadromous fish value	\$1,800,000	Increased	Reduced	No change
Sports fish value	232,000	Slight incrise	Reduced	Slight incrise

Evaluation based on assumption that the areas develop to the potential permitted. Fishery biologists have estimated trends but cannot realistically project true value received from fishing.

ACTIVITY	CY 1974 VUD	1/ PAOT	Units of Measure	Projected Needs 1990 3/	PROPOSED PLAN Compared with		ALTERNATIVE A Compared with		ALTERNATIVE B Compared with	
					1990 needs	Proposed	1990 needs	Proposed	1990 needs	Proposed
<u>Dispersed Recreation</u>										
Fishing	119800	N/A		2411 mi net 1263 miles	Lower	Much Lower	Lower	Same	Lower	Lower
Driving	109900	N/A			Slightly Lower	Moderate	Moderate	Lower	Lower	Lower
Mountaineering	18400	N/A				Higher	High	Lower	Higher	Lower
Hiking	376300	N/A	41 miles	132 mi (1320 PAOT)	Lower	Higher	Lower	Higher	Approx same	Approx same
Camping	199800	N/A		160 mi (640 PAOT)	Lower	Lower	Lower	Higher	Approx same	Slightly lwr
Horseback riding	13400	N/A								
Subtotal	837600									
Hunting	4200	N/A		121000 acres exist & avail	Same	Slightly Lower	Lower	Higher	Lower	Lower
Big & small game										
Wilderness	51800	N/A	14000 acres 33500 acres		Increase by 33500 acres	Same		Same		
Wilderness Study										
TOTAL DISPERSED	893600									
<u>Developed Recreation</u>										
Camping	294500	1430	582 units	1285 units (10280 PAOT)	Higher	Same	Higher	Lower	Slightly lwr	Lower
Picknicking	150600	1355	385 units	204 units (1428 PAOT)	Same	Moderate	Lower	Lower	Lower	Lower
Skiing	197500	12100		100% increase (13,458 acres)	Lower	Lower	Lower	Lower	Lower	Lower
Winter Sports (other)	141200	300		100% increase	Lower	Lower	Lower	Lower	Lower	Lower
Swimming	16800				Increase	Higher		Lower	Lower	Lower
Resort (public own)	95200	235			Lower	Higher		Lower	Lower	Lower
Boating	31800	45			Lower	Higher		Lower	Lower	Lower
Golf			18 holes	8 launch ins (1400 PAOT)	Lower	Higher	Slightly Lwr	Lower	Lower	Lower
Organization sites	47900	751		54 holes	Lower	Higher	Lower	Lower	Lower	Lower
Spectator-sight-seeing										
TOTAL DEVELOPED	975500									
TOTALS	1869100									

1/ Visitor Use Day - One person during a 12 hour period or equivalent.

2/ PAOT - People at one time (capacity)

3/ A Feasibility Study for the Wildwood Recreation Site - June 1975, U.S. Department of Interior, Bureau of Land Management. Wilsey and Ham.

VISUAL RESOURCE ASSESSMENT

Proposed Plan

Under the proposed plan, the total acres managed to meet the first three visual quality objectives* (Preservation, Retention, and Partial Retention) would increase by 26% as compared to the existing situation. Sixty-two percent of the lands in the planning unit would be managed to meet one of these three visual objectives, all of which require that any management activity remain subordinate to the natural landscape character.

VISUAL QUALITY OBJECTIVES

	Existing Situation		Proposed Action		Alternative A		Alternative B	
	Acres	%	Acres	%	Acres	%	Acres	%
Preservation	14,000	9	51,100	32	50,100	31	65,600	42
Retention	22,000	14	22,300	14	16,700	11	30,500	19
Partial Retention	61,500	39	66,900	42	61,300	39	56,200	36
Modification & Max. Mod.	31,800	20	13,900	9	26,400	17	2,200	1
Non-USFS	28,600	18	3,800	2	3,500	2	3,500	2
Total Acres	158,000		158,000		158,000		158,000	

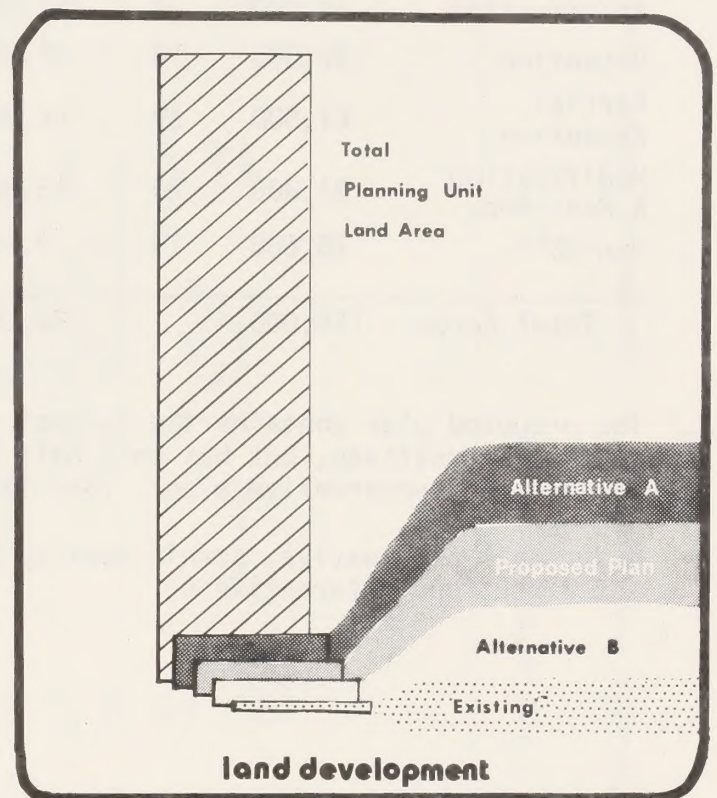
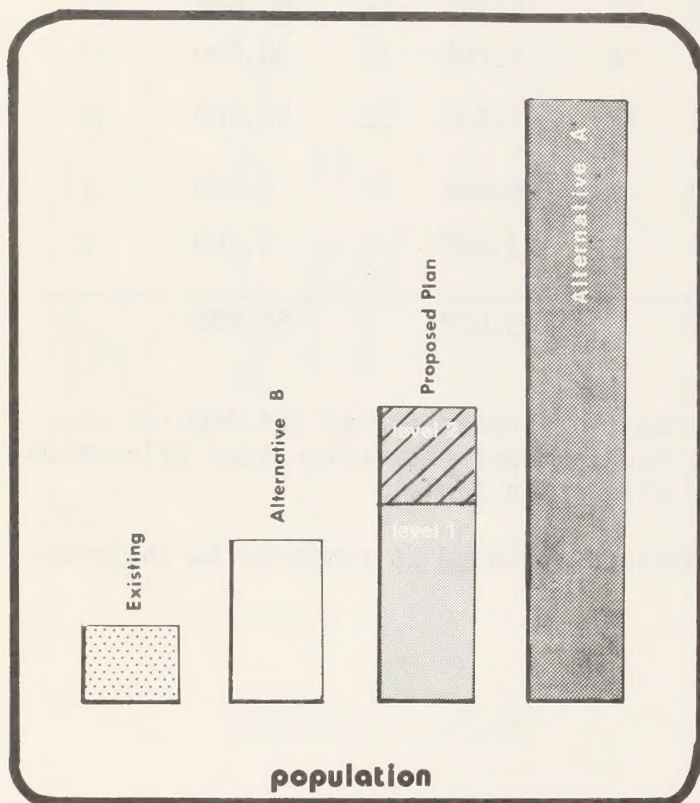
The proposed plan contains the largest acreage of scenic forest (64,480) of any of the alternatives, but has only half as much outdoor recreation land allocation as does the conservative plan. (See land allocation table.)

Under this alternative, scenic quality would be upgraded as compared to the present direction (Alternative A).

* See Glossary

ASSESSMENT/HOUSING AND POPULATION

		Proposed Plan	Alternatives	
			A	B
Number of dwellings level	I	6900-8700;	16800-18600	4100-5200
	II	7300-10400		
Population	I	16000-21000;	53000-60000	12000-16000
	II	20000-29000		
Acres:				
Rural		4720	--	2440
Low density resident		3720	11730	2340
Planned resort		415	470	160
TOTALS		8855	12200	4840



GROWTH RELATIONSHIPS BY ALTERNATIVE

ASSESSMENT/PUBLIC SERVICES

Acres:				
Sewers		1200-1700	6400	800
Septic tank*		7100-7600	5800	4000

*Will meet DEQ standards

PRELIMINARY ESTIMATE OF COMPARISON
OF ECONOMIC ACTIVITY BY SECTOR AND ALTERNATIVES

	% of all Revenue			% of all Wages			% of all Labor		
	*C-R	F	A	C-R	F	A	C-R	F	A
Proposed Plan	85%	9%	6%	85%	8%	7%	75%	4%	21%
Plan A <u>1/</u>	92	5%	3%						
Plan B <u>2/</u>	85%	5%	10%	85%	5%	10%			

1/ Wages and employment cannot be accurately estimated on proposal development scheme under Alternative A

2/ Employment has not been estimated for Plan B

Source: Mid-Columbia Economic Development District

* C-R = Commercial-Recreation Sector
F = Forestry Sector
A = Agriculture Sector

GENERAL ASSESSMENT SUMMARY
MT. HOOD INTERAGENCY DRAFT EIS

Environmental Effects	Proposed Plan 1/		Alternatives	
	Level 1	Level 2	A	B
1. Air Pollution				
		Increases in residential and recreational traffic, furnace emissions and wood smoke from houses, and slash disposal may cause some air quality degradation.	Greatest increase in recreational and residential traffic, home furnaces, fireplace & slash disposal.	Least amount of increase in residential and recreational traffic, numbers of residents and slash disposal.
Automobile Emissions (tons/yr)	4,990	5,980	7,890	3,880
Home Furnace Emissions (tons/yr)	75-90	78-103	155-170	52-61
2. Water Pollution & Erosion				
		Water quality maintained thru adherence to standards and additional sewage treatment facilities. Residents, visitors, logging and agriculture will contribute to increased non-point pollution.	Increases in population and visitors and higher levels of timber harvest. Non-point pollution will increase greatly due to large increases in resident, visitors and logging activities.	Lowest resident and visitor population, with lower level of timber harvest means relatively slight increase in non-point pollution.
Sedimentation				
Annual volume from developed areas (tons/yr)	9,600	9,800	14,500	5,000
Sewage Effluent				
Total volume (million liters/yr)	2,210	4,000	8,280	1,660
--% generated from proposed sewer areas	76	86	75	51
Pollutants (BOD, COD, N, SS)				
--from proposed sewer areas (kilograms/yr)	111,090	228,556	410,266	59,187
Storm Runoff				
Total volume in urbanized areas (million liters/yr)	3,410	4,830	18,240	2,280
3. Solid Waste				
Total Volume (tons/yr)	11,680	21,170	43,800	8,760

4. Noise	Where buffers and setbacks are absent, high level of noise irritation is likely.		Buffers more likely to be lacking; higher total auto use means greater transportation noise.	Lower total density and developed housing mean less auto use and construction activity - hence less noise.
Acres of Probable Exposure to Urban Noise Level (50-55 dB)	4,100	4,100	12,200	2,400
5. Vegetation & Wildlife	Direct effect of population increase, added housing, and road development is to degrade wildlife habitats, increase harassment and reduce diversity.		More impact than proposed plan because of area developed and timber harvested.	Less area under commercial timber management and development than proposed plan and lower harassment level.
Index of Impact Upon Wildlife Diversity ^{2/}	- .7	-2.2	-5.7	-.3
Acres Cleared for Development	1,800	1,800	3,700	1,000
6. Fisheries	Streamside management practice will cause no substantial change in fish habitat. Fish rearing ponds in Salmon River area will be provided, increasing fish production and economic revenues.		Residential growth cause increase in non-point pollution affecting water quality and fish habitat. No additional fish rearing facilities.	Lowest overall development impact; some additional fish rearing facilities provided.
7. Visual Quality	Development more concentrated with less scenic area altered than in Alternative A. More precise scenic standards.		Greatest scenic degradation thru extensive development.	Provides for least amount of development; improved scenic quality on forest lands.
Index of Impact Upon Scenic Quality ^{2/}	+ .1	-.7	-2.5	+ .3
8. Water & Energy Consumption				
Total Domestic Water Requirement (thousand gallons/day)	970-1620	1870-3120	3350-5580	740-1230
--Demand in proposed sewer areas (% total)	52	40	86	51
Energy Consumption (Annual BTU)	947x10 ⁹	1306x10 ⁹	1974x10 ⁹	652x10 ⁹

	Proposed Plan		Alternatives	
	Level 1	Level 2	A	B
<u>Socio-Economic Effects</u>				
9. Commercial-Recreation Economy				
Total Value (All Income)	\$26,000,000	\$52,000,000	\$108,753,000	\$21,500,000-\$26,000,000
% of all revenues	85	85	92	85
Total Wage Requirements	\$13,000,000	\$23,639,000	(Higher than Proposed Plan)	\$9,700,000-\$13,000,000
% of all wages	85	85		85
Total Employment	2,519	4,554	(Higher than Proposed Plan)	(Lower than Proposed Plan)
% of all labor	75	75		
10. Timber Industry				
Acres of Commercial Forest ^{3/}	67,400		69,400	51,300
Present Yield (MBF/yr) ^{4/}	27,769		28,592	21,135
Timber Value (\$/yr) ^{5/}	4,329,221		4,456,663	3,302,170
County Tax Revenue (\$/yr) ^{6/}	1,125,328		1,183,842	847,970
Direct Jobs ^{7/}	156		160	118
Payroll Value (\$/yr) ^{7/}	7,956,000		8,211,000	6,018,000
Intensive Yield (MBF/yr)	47,289		47,579	43,779
Timber Value (\$/yr) ^{5/}	7,372,407		7,416,190	6,840,112
County Tax Return (\$/yr) ^{6/}	1,837,354		1,907,348	1,621,139
Direct Jobs ^{7/}	267		267	246
Payroll Values (\$/yr) ^{7/}	13,617,000		13,617,000	12,546,000
Fire Risk & Hazard	Fire risk increased due to additional residents and timber harvest; maintain fuel levels at moderate level through slash disposal and improved utilization.	Fire risk increased due to additional residents and timber harvest; maintain fuel levels at moderate level through slash disposal and improved utilization.	Most severe fire risk because of large resident and visitor increase and timber harvesting; maintain fuel levels at moderate level through slash disposal and improved utilization.	Still some increase in fire risk due to increases in population and harvesting; more large unroaded areas will cause fuel hazard to build over the long range.

11. Agriculture

Acres of Farm Land

	3,800	3,800	3,480	3,480
Total Production Value (\$/yr)				
Orchard Value 8/		2,812,250	2,765,000	2,765,000
NonIrrigated Pasture 9/		2,713,000	2,713,000	2,713,000
Irrigated Pasture 10/		99,250	52,000	52,000
		198,500	104,000	104,000

12. Community Housing & Population

Total Housing Capacity (Units)	5400-8700	7300-10,400	16,800-18,600	4100-5200
% in proposed sewer areas 11/	36-59	50-71	82	23-29
Maximum Population Level	16,000-21,000	20,000-29,000	53,000-60,000	12,000-16,000
Total Capital & Operating Costs (Schools, Streets & Roads, Utilities, Public Services)	\$28,200,000-\$33,800,000	\$68,500,000-\$82,600,000	\$187,800,000-\$225,000,000	\$15,000,000-\$18,800,000
--Proposed Sewer Costs (% total)	8-9	6-8	8-9	16-22

Community Environment

Increases auto congestion and possible loss of small mountain community atmosphere as densities and neighborhood land use patterns change.

Much higher overall impact than Proposed Plan; present forest character and community pattern altered and lost.

Lower overall impact than Proposed Plan; present image and character maintained.

GENERAL ASSESSMENT REFERENCES

- 1/ Level 1 & 2 -- These are the different population provisions of the Proposed Plan, based primarily on the Clackamas County Decision Process with regard to additional sewers in the Brightwood community. (Level #1 = 16-21,000; Level #2 = 20-29,000 population.)
- 2/ Index values are a percentage factor relative to the estimated population capacity for the particular element, i.e., scenic or wildlife. For example, a value of +.7 means the alternative exceeds the element's carrying capacity by 70%; a value of -.3 means 30% below the estimated capacity limit.
- 3/ Commercial forest acres are based on land category decision and field examinations using criteria in PNW field instructions for integrated forest survey (Oregon and California). Acres were based on measurements from 2"=1 mile USGS maps with a planimeter.
- 4/ Present yield estimate based on current Forest Service management level on the Mt. Hood National Forest. This includes the present level of stocking level control. The unit MBF is 1,000 board foot measure Scribner decimal "C" log scale. (This estimate is preliminary.) Timber yields are based on sustained yield levels developed in the Mt. Hood-Willamette yield tables. Yield coefficients were contingent on the field condition and calculated with a linear program model. Yields were reduced by 50% on lands where "retention" visual standards were applied and the area was removed for streamside management protection.
- 5/ Timber value for federal, state, county and private timber is based on three years of average value bid for stumpage on the Mt. Hood National Forest of \$114.60/MBF, BLM timber values based on \$129.07 MBF on BLM district. The values have been increased by 35.1% to reflect the value of products delivered to the mill.
- 6/ Tax returns based on 25% of stumpage value returned to counties in lieu of taxes to be used for county schools and roads on National Forest land, 50% return of stumpage receipts on BLM, 75% return to county on state, total return on county and tax estimate return on private (variable estimate based on Publishers Paper Co. 1974).
- 7/ Based on the Pacific Northwest Experiment Station estimates 5.63 CMP/MMBF; Payroll \$51,000/job.
- 8/ Orchard production assumes orchards intensively managed with irrigation. Estimates supplied by Hood River County Agriculture Extension Agent. Value per box based on 1974 sales.
- 9/ Extensive pasture estimates based on non-irrigated hay production. Sources same as above.
- 10/ Intensive pasture based on irrigated pasture alfalfa and fescue. Cost based on 1975 sales. Estimates provided by County Agricultural Extension.
- 11/ Proposed sewers -- These are the areas in the lower Highway 26 corridor proposed for sanitary sewers under the respective alternatives, and which correspond to the alternatives discussed in the preliminary sewage collection analysis proposed by ST&R.

GOALS ANALYSIS

The following evaluation entitled "Relationship of LCDC Goals and Planning Unit Goals" was prepared to show the interrelationships between the LCDC goals and the goals of the Mt. Hood Planning Unit. Each interagency goal or major planning provision directly or indirectly supports at least two of the fourteen state-wide goals. Federal and regional goals are consistent with those of the planning unit.

The relative effectiveness of the three planning alternatives in achieving or complying with the LCDC goals and related planning unit provisions has been summarized in the following chart entitled "Alternatives Evaluation". With the exception of Environmental Capacity, each of the goal categories is comprised of a single State goal and associated interagency goals (see figure). The key for the general ratings of how well each alternative supports the goals is: ● = strong support; ◐ = moderately supportive, and ○ = weak or uncertain support.

Reasoning for the ratings is presented in the text following the chart.

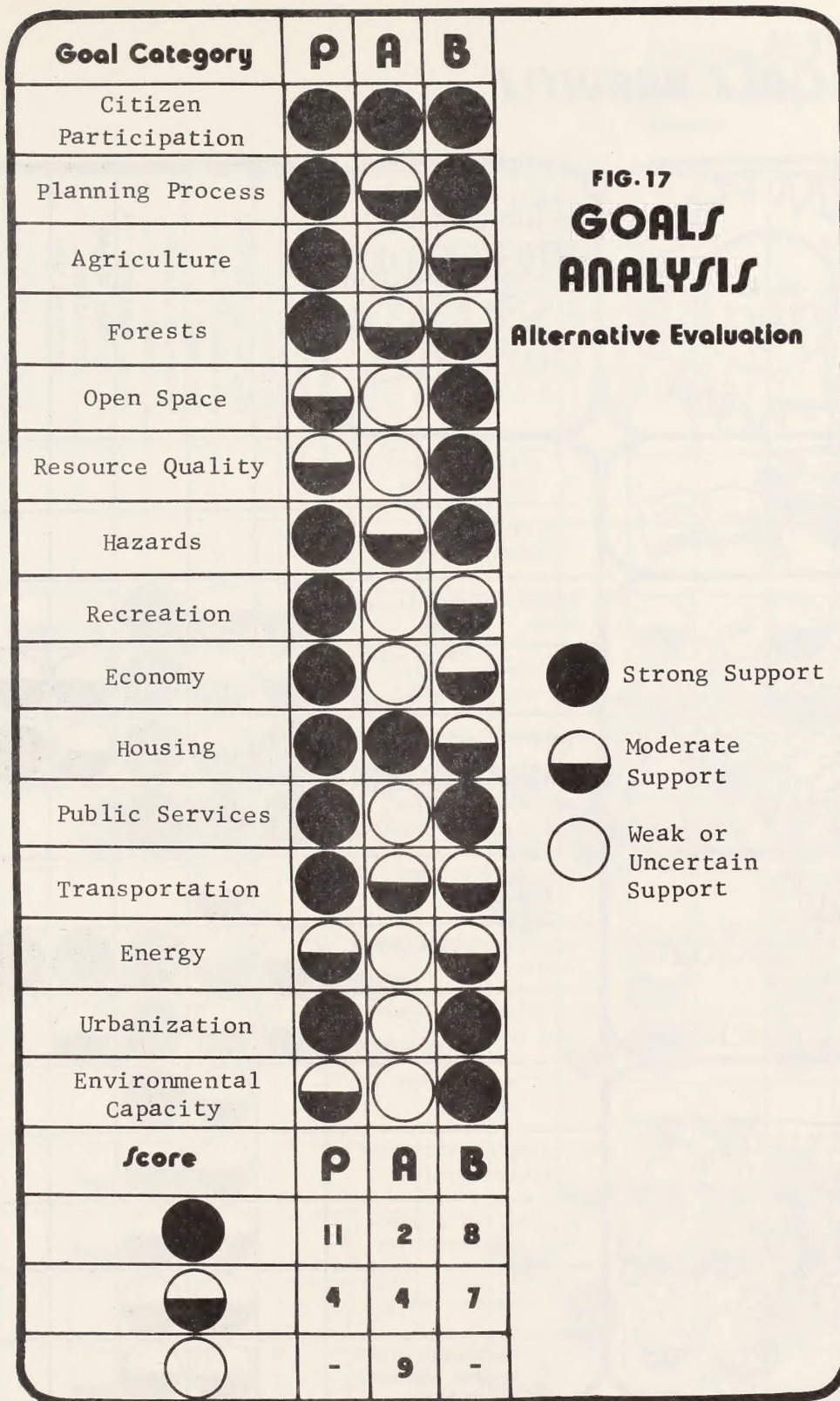



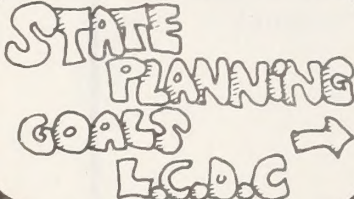
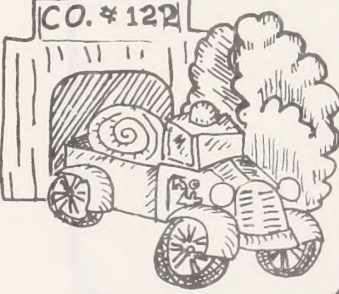






































FIG. 18
GOALS ANALYSIS

					MT. HOOD INTERAGENCY GOALS → POLICIES	Protect the Mountain area as a unique resource	Plan in accord with its capacity for sustained use	Recognize land as a resource & allow no one dominant use	Provide varied recreation opportunities	Protect wilderness
					Insure Citizen Participation					
					Establish a Planning Process					
					Preserve Agricultural Lands					
					Conserve Forest Uses & Lands					
					Conserve Open Spaces, Natural Scenic Resources					
					Improve Air, Water, Land Resources Quality					
					Protect From Hazards					
					Satisfy Recreational Needs					
					Diversify & Improve the Economy					
					Provide For Housing					
					Plan For Efficient Public Services					
					Provide For Economic, Safe Transportation					
					Conserve Energy					
					Establish Urban Growth Boundary					

Relationships of State and Planning Unit Goals

[illegible]

Inter-agency goals and planning provisions which directly support State Goals.

Inter-agency goals and planning provisions which indirectly support the State Goals.

GOAL CATEGORY #1 - CITIZEN INVOLVEMENT

Alternative(s) best meeting the Citizen Involvement Goals: All three alternatives.

Reasons: The existing plans and zoning alternative (Alternative A) and the two new interagency alternatives (Proposed Plan and Alternative B) all assume a continuous citizen involvement opportunity consistent with the scale and complexity of the Mt. Hood area. Different approaches are entirely possible in insuring a program which is adequate and meets state law. The proposed M.A.C. (Mountain Advisory Committee) structure, however, provides a formal participation opportunity for all citizens (local, regional, statewide) interested in the future of Mt. Hood and is the more obvious approach. This would apply to all alternatives.

GOAL CATEGORY #2 - PLANNING PROCESS

Alternative(s) best meeting the Planning Process Goals: Proposed Plan and Alternative B.

Reasons: All alternatives provide for a continuation of planning in the Mt. Hood area. The proposed plan and alternative B, however, would commit the various agencies to a more positive, formal structure of coordination and monitoring during plan implementation. This would occur within a common policy framework. The structure would not require relinquishment of territory or authority by any one agency, but would include cooperative political and/or administrative participation. The interagency plan in itself is an extension of a planning process begun some time ago, and a refinement of existing, adopted land use policy. A technical review provision for major development proposals would be maintained as an on-going, cooperative exchange of interagency expertise.

Other Alternatives: Alternative A.

The commitment to interagency coordination is less direct, limiting the effectiveness of this alternative in dealing with areawide problems. There are gaps in the present plans as well as inconsistencies between them. Issues of regional concern could be less settled than before. Policy formulation and decision-making from one agency to another would be more independent, lacking the common frame of reference and basis for communication provided by interagency planning.

GOAL CATEGORY #3 - AGRICULTURAL LANDS

Best Alternative: Proposed Plan

Reasons: The proposed alternative would retain the highest proportion of the planning unit in a farm category, maintaining high agricultural production opportunities. This has the greatest potential in Hood River County. The alternative has been designed to provide protection to the farm resource through proposed compatible land use zoning and classification which should provide for more equitable land valuation and taxes.

Other Alternatives:

Alternative B has a higher potential agricultural yield than Alternative A, assuming that the areas available for housing development are used for housing. All alternatives retain a significant proportion of the planning unit for agricultural use.

GOAL CATEGORY #4 - FOREST LANDS

Alternative(s) best meeting the Forest Lands Goals: Proposed Plan

Reasons: The sustained timber production level of the proposed plan is nearly as high as Alternative A. The potential for higher yields available from other forest reserves on National Forest lands exists if needs dictate. The Proposed Alternative and Alternative B will retain the highest percentage of lands in a forested condition. The proposed plan also provides for a great variety of forest recreation experiences and high productivity of forest resources, i.e., wood, water, fish, and wild game.

Other Alternatives:

Alternative B retains a higher percentage of lands in a forested condition but results in a significant loss in production from Alternative A by placing more of the National Forest land in a recreation reserve category.

GOAL CATEGORY #5 - OPEN SPACES, SCENIC AND HISTORIC AREAS, AND NATURAL RESOURCES.

Alternative(s) best meeting the Open Spaces, Scenic and Historic Areas and Natural Resources Goals: Alternative B.

Reasons: Alternative B would retain the largest amount of land in an unroaded condition, with the least man-induced impact of any of the alternatives. The population density would also be lower under this alternative. The comparative reduction in man's activity level would have favorable influences on wildlife, better protect historic sites and retain more of the visual character.

Other Alternatives:

The proposed alternative is second to Alternative B. The populations would be lower than Alternative A and the amount of open space higher than Alternative A. Opportunity for enhancement of historic sites, wildlife habitat, and scenic quality would be available. Management of vandalism problems should also improve.

GOAL CATEGORY #6 - AIR, WATER, LAND & RESOURCE QUALITY

Alternative(s) best meeting the air, water, land and resource quality Goals: Alternative B.

Reasons: This alternative would have the lowest population, use the least amount of land and have the lowest percent of housing on septic systems, along with similar environmental controls. Energy consumption would also be the lowest under this alternative. It is the alternative with lowest potential for degrading environmental quality while providing the highest air, water and land resource protection.

Other Alternatives:

The proposed alternative could be a close second to Alternative B in terms of population, intensity of land use, area on septic systems and energy consumption. The proposed alternative has the advantages of: (a) efficient sewage systems (larger controlled service areas); (b) improved fire protection (fuels management on public lands, improved community fire service); and (c) improved access for management of resources. Alternative A has a potential for the highest level of impact and uncertainty.

GOAL CATEGORY #7 - HAZARD PROTECTION

Alternative(s) best meeting the Hazard Protection Goals: Proposed Plan and Alternative B.

Reasons: All alternatives have been developed using land suitability maps which delineate geologic hazards, soil hazard areas, flood plains and wetlands. The Proposed Alternative and Alternative B also have less area available for development which minimizes potential risks to resident populations.

Alternative A contains the highest level of development and associated risk factors. It has similar opportunities to manage hazards as the proposed alternative, but may be less effective due to more limited agency coordination.

GOAL CATEGORY #8 - RECREATION

Alternative(s) best meeting the Recreational Goals: Proposed Plan

Reason: The proposed alternative provides opportunity for the most balanced and land-efficient means of achieving a variety of recreational experiences. This is based on provision for: (a) a variety of forest land classes available for dispersed recreation; (b) additional developed ski areas, golf courses, etc.; (c) additional family oriented recreation opportunities; (d) developed camping in areas like Wildwood, Trillium Lake, etc.; and (e) community recreation areas.

Other Alternatives:

Alternative B provides the greatest opportunity for recreational experience associated with the natural environment. Alternative A emphasizes more highly developed recreation. All alternatives will provide a basis for maintaining a variety of recreation. The principal differences lie in the quality, quantity and type of experience available.

GOAL CATEGORY #9 - ECONOMY

Alternative(s) best meeting the Economy Goals: Proposed Plan

Reasons: The principal economic sources within the planning unit are recreation-tourism, timber production and agriculture. The strongest of these forces is recreation-tourism.

The proposed alternative has as its principal purpose a provision for strengthening each of these economies without significant loss in the environmental quality upon which each is dependent. Additional expansion in developed recreation areas with opportunity for added accommodations for tourists, for example, will help stabilize the use period. Maintenance of the principal timber producing lands will increase production and returns to the public. Concentration of housing within designated service areas will provide improved services at lower costs per unit.

The retention and designation of areas for agriculture will provide opportunities for further improvements in production and reduced land tax. Protection of streamside zones, floodplains and provision for fish rearing areas will provide opportunity for an increase in returns to the state for anadromous fish production.

Other Alternatives:

Alternative B has relatively more limited economic opportunities, but a controlled growth level.

Alternative A may have a higher level of economic opportunity, but dominated by the recreation-tourism sector. Depending on case-by-case decisions, an over-balanced extension of the Portland "bedroom" with an eventual reduction of high quality recreation experience could also develop.

GOAL CATEGORY #10 - HOUSING

Alternative(s) best meeting the Housing Goals: Proposed Plan or Alternative A.

Reasons: The housing provision is the highest under Alternative A in terms of long-range potential availability. This is irrespective of the ability to achieve such a level of growth, which is possible but not likely.

Although the Proposed Plan's provision is not as high, it nevertheless is very substantial (level #1 or #2). In addition, it is more balanced from the standpoint of resource allocation, maintenance of community character, and actual growth prospects.

Other Alternatives: Alternative B.

The possibility of a reduction in potential availability due to a lower allocation of land could have the consequence of increasing housing

costs. While this alternative provides for enough housing to fulfill regional expectations, it tends toward a lower allocation range. The potential for reduced supply and increased costs combine to limit the relative effectiveness of this alternative in meeting the goals.

GOAL CATEGORY #11 - PUBLIC SERVICES

Alternative(s) best meeting the Public Services Goals: Proposed Plan and Alternative B.

Reasons: The Proposed Plan and Alternative B deal more effectively with the need for essential services, dovetailing these needs with the land use element and other planning provisions. There is far less uncertainty where sewer and water service, in particular, would occur or be encouraged. It is assumed that implementation and funding of the proposed service elements would come easier if within a coordinated interagency plan framework, as is the intent of these two alternatives.

Other Alternatives: Alternative A.

This alternative provides and would require services to support the eventual growth level, unclear as that direction may be. Attempting to provide for a wide range of possibilities and contingency, however, is inefficient and could lead to continued conflict and more uncertainty.

GOAL CATEGORY #12 - TRANSPORTATION

Alternative(s) best meeting the Transportation Goals: Proposed Plan

Reasons: With their concentration of densities, either level #1 or #2 of the Proposed Plan would encourage and have greater potential to achieve transit service opportunities. The maximum level of development and improvement on Highway 26 would be established, more compatible with long-range population goals, and less dominant as a land use issue.

Other Alternatives: Alternative A and B

Alternative B provides a level of highway development commensurate with the growth objective, but is more limited in its ability to encourage mass transit. Less coordination in highway improvement and land use policy, and more emphasis on accommodating the automobile at the expense of scenic resources and other public expenditure priorities are main drawbacks associated with Alternative A.

GOAL CATEGORY #13 - ENERGY CONSERVATION

Alternative(s) best meeting the Energy Conservation Goals: Proposed Plan and Alternative B.

Reasons: The Proposed Plan could make the planning unit less dependent on outside energy services due to the opportunity for geothermal hot water development. The planning unit could be an energy supply area. The Proposed Plan also provides for concentrating growth in developed service areas, thereby conserving energy through more efficient services.

The lowest consumption potential would be with Alternative B, due to lower, overall densities. In comparison to present consumption levels, however, Alternative B means at least a doubling of energy demands.

Other Alternatives:

In the event that exploration would reveal that the area does not have suitable geothermal water, Alternative B would be the strongest since the consumption rates would be lowest. Alternative A provides the opportunity for continued development without planned service areas, reducing per unit efficiency. In addition, Alternative A has the highest energy consumption potential.

GOAL CATEGORY #14 - URBANIZATION

Alternative(s) best meeting the Urbanization Goals: Proposed Plan and Alternative B.

Reasons: Urban and urbanizable (e.g., level 2 of the Proposed Plan) boundaries are defined within reasonably specific limits for both Alternative B and the Proposed Plan. The densities are adequate to support the necessary, complementing service levels, with the established areas and those with existing development problems receiving priority in the timing and provision of public services. Communities could be more distinct, while the direction for adjoining rural and natural resource areas would be more definitive and in keeping with carrying capacity principles.

Other Alternatives:

Alternative A is based on a continuation of present zoning and planning policy. This has the inherent problem of over-allocating land for housing, in addition to a policy that makes ultimate density patterns dependent upon service levels. Without a concise, urban service provision or policy, the alternative becomes further compounded. This alternative does not effectively address the state goal of urbanization or related interagency objectives, leaving future directions very much open-ended.

GOAL CATEGORY #15 - ENVIRONMENTAL CAPACITY

Alternative(s) best meeting the Environmental Capacity Goals: Alternative B.

Reasons: The goal and provision of environmental capacity is initially one of determination and, secondly, development of a plan consistent with that determination. While several features of the concept are variable (as indicated in the Environmental Capacity Analysis), it is apparent that as population increases, more and more of the identified values in the Mt. Hood area become compromised -- and would eventually reach a point where radical alterations in character, unacceptable levels of public expenditure, and degradation of resource quality would occur. A major objective of the Interagency Plan is to avoid this kind of breakdown. Alternative B, with its lower overall population provision, reduced levels of development and environmental alteration, compromises

the principles and limits of environmental capacity the least of all three alternatives. Out of the twelve primary elements examined, perhaps two (wildlife diversity and schools) would be significantly affected.

Other Alternatives: Proposed Plan and Alternative A.

The proposed plan would have more impact upon the elements of environmental capacity than Alternative B, but considerably less than Alternative A. The severity of impact would depend upon decisions made with regard to "level #2". In general, the proposed alternative could double the level of compromise associated with Alternative B.

Alternative A has by far the greatest potential for substantial compromise and degradation of values associated with the Mt. Hood area. This is approximately four to five times the level of Alternative B. In addition, the policy/goal has to be implemented by all agencies with standing in the planning area to be effective. Without a commitment to such an ongoing, concerted effort, the objective is impossible to achieve. Alternative A is therefore the least effective in terms of respecting the environmental capacity provision.

CONSULTATION WITH OTHERS

Public Participation.

The interagency planning effort has involved a number of diverse public participation activities. The objective of these activities was to inform and involve as many citizens as possible in the development of the Mt. Hood Plan.

After the signing of the Memorandum of Understanding by the participating agencies in June of 1973, a brochure announcing the planning effort was prepared and distributed to interested people, organizations and agencies. In conjunction with release of the brochure, public meetings were held in Sandy and Hood River, Oregon. Also, the Executive Committee appeared on a television question and answer program where the public could call in questions to which they would respond. Involvement in the planning effort was emphasized on the program.

Not long after the announcement, a Citizen Advisory Committee (CAC) was formed. This committee of 25 interested citizens has met approximately twice a month since early 1974 and provided valuable review and comment throughout the planning process. Time and effort of the CAC was completely donated and their participation greatly appreciated.

A land suitability analysis was completed in spring 1974 and displayed in another brochure. Also included in the publication were proposed goals for the plan, jointly developed by the CAC and the Planning Team. A questionnaire requesting public comment on the proposed goals was provided. Between 5000 and 7000 of these brochures were distributed to the public. In order to publicize the availability of these brochures, newspaper ads, radio and television spots were utilized.

Also, the planning team made presentations to a number of groups and organizations explaining the suitability analysis and proposed goals, (see accompanying list). Over 400 questionnaires were returned on the proposed goals. Public comment was influential in finalizing the goals of the plan, (see Summary Analysis of Public Response to Proposed Goals).

In March 1975, public participation activities again went into high gear with the distribution of a brochure outlining four broad land use Futures for the planning unit. This brochure also included a citizen response form on which citizens were invited to comment on "Futures" concepts and specific land uses. Three public workshops were held at Parkdale, Welches and Portland, Oregon. At these meetings, interested persons asked questions and provided comment on the Futures. Concurrently, the planning team provided presentations to groups and organizations upon request. A film, prepared by the Public Education Broadcasting Station (PEBS - Channel 10) of Portland, Oregon was shown on television and at group presentations during the public commenting period. Several members of the planning team and the Chairman of the Executive Committee appeared on a question and answer television program on PEBS. Availability of the Futures brochures was publicized again in newspapers, radio and television spots.

Over 3,000 Futures brochures were distributed and approximately 540 response forms were returned. Public comment on the Futures contributed to the development of the proposed plan and alternative plans presented herein. (See Summary of Analysis of Public Response to Futures.)

Throughout the planning process, CAC and Executive Committee meetings have been open to the general public. Notices of these meetings were published in local newspapers and were periodically attended by interested individuals.

Public participation activities have resulted in a mailing list of over 1,700 individuals, organizations and agencies. All publications have been sent to those on the mailing list. In addition, a periodic newsletter was sent to the mailing list describing updates of stages of the study and upcoming activities, schedules and meetings.

Issues Identification

Land use issues are continually being identified by the public. There are at least four issues which the planning team feels have been central to the entire interagency program -- (1) sewer development, (2) wilderness expansion, (3) Highway 26 improvement, and (4) density controls. The Citizen Advisory Committee (CAC) has also been instrumental in focusing on key issues within the planning unit, and they have identified 18 fairly specific areas of concern which the proposed plan or subsequent plans and policies should address. Following is a list of these issues:

Visual standards or scenic quality including performance standards.

Highway transportation including peak loading, frontage roads, traffic flow, etc.

Building siting and building construction including building location and design review.

Dispersed recreation including trails, off-road vehicles, etc.

Water quality including surface water drainages.

Solid waste disposal.

Wildlife including dog control and winter habitat.

Community character (motif).

Preservation including meadows, historic sites and markings.

Noise control.

Developed ski areas including facilities, snow removal.

Campground policy including overnight camping opportunities and facilities and the compatibility with other uses.

Summer home policy.

Citizen involvement.

Information including signs, public or visitor information services.

Geothermal power siting.

Water impoundments.

Public safety.

In addition to the above, the general public, through their response to the Planning Unit Goals and the Land Use Futures, has provided some statements of problems, concerns and issues in the Mt. Hood area. These are summarized below:

Unbridled residential development.

Preservation of environmental quality.

Retention of quality recreation experiences and opportunities.

Timber production and harvesting.

Wilderness protection and expansion.

Economic development.

Community identity and character.

Mass transportation or alternatives to the automobile.

Excessive government power.

Conservation of agricultural land.

Power transmission corridors.

Sewage disposal.

Policy Input

The Citizen Advisory Committee established specific policy suggestions for seven of the issues which they felt were of major importance. These are included here, along with notes and comments of the planning team, as follows:

CAC Policy Suggestions

Planning Team Notes

1. Visual Quality -

- A. Visual standards shall include a site specific landscape management plan, including maintenance, and be subject to annual review.

Visual standards are indicated for each land category and would be enforced through existing County design review and Federal Special Permit procedures. New ordinance specifications may be needed to fully meet standards. page 87

- B. All signs shall, by design, express the mountain character, and flashing, neon and moving signs shall be prohibited.

Existing County sign and zoning ordinances provide for such protection.

- C. Power line installations shall be along existing secondary roadways or narrow screened right-of-ways. Underground installations shall have preference whenever practical.

See pages 105-111

2. Highway Transportation -

- A. A bus-oriented shuttle service shall be developed for the highway corridor.

See pages 75,109

- B. Traffic control programs shall be instituted in preference to further highway widening.

See pages 142-146

- C. Highway 26 shall be widened from the east Brightwood junction to Zigzag to conform to present standards for two-lane highways and preserve "A.J. Dwyer Memorial Forest Corridor" in its present state.

See pages 73,109,128

3. Building Siting and Construction -

- A. Slopes in excess of 25% proposed for development must have a conditional use permit.

Slopes in excess of 25% are classed as unsuitable for development for a variety of reasons. Non-housing projects proposed on such slopes are dealt with on an individual performance basis, as in a conditional use procedure.

4. Dispersed Recreation Land -

- | | |
|--|------------------|
| A. Develop management techniques to maintain and enforce the separation of incompatible recreational uses of land and maintain user levels within the limits of optimum carrying capacities as defined by biological potential, water quality limit and similar factors. | See page 86 |
| B. Establish an ongoing representative citizens' committee by Ranger District to review forest management activities. | See Introduction |

5. Water Quality -

- | | |
|---|-------------|
| A. Water quality and quantity are deemed to be of primary importance to the planning unit and compromises with existing and proposed state standards shall not be considered. | See page 89 |
|---|-------------|

6. Solid Waste Disposal -

- | | |
|--|-------------------|
| A. Solid waste disposal site shall be re-established within or near the west end of the planning unit. | See pages 105-111 |
|--|-------------------|

7. Wildlife -

- | | |
|---|---|
| A. Free-roaming dogs are considered a serious threat to the mountain environment and adequate management and funding shall be provided to eliminate such animals. | Supported by Proposed Plan.
See page 108 |
| B. Quality management techniques shall be developed to strictly enforce all rules and regulations pertaining to hunting and fishing. | Responsibility of County Sheriff and State Police. Supported by Proposed Plan. |
| C. Maintenance of native wildlife habitat shall be given priority over development when such land use conflicts arise and no other constraints apply. | Supported to a degree by allocation population provisions of Proposed Plan. Very difficult to fully implement, but is important trade-off decision. |

Exhibit

- A Glossary
- B Selected References
- C Letter from BLM
- D Letter from State Historic Preservation Officer
- E Memo of Understanding
- F Summary of Public Input Analysis on the Proposed Objectives
- G Summary of Public Response to Futures
- H Special Reports
- I Ad Hoc Technical Reviews of Proposed Projects
- J Report - Environmental Capacity Abstracts
- K Mt. Hood Planning Unit - Its Wildlife
- L Soils Assessment and Discussion
- M Geology Assessment and Discussion
- N Water Quality and Quantity Assessment
- O Plant Community Survey
- P Wildlife Assessment and Discussion
- Q Recreation Assessment and Discussion
- R Energy Analysis
- S State Highway System - Assessment and Discussion
- T Traffic Information - Survey Results
- U Land Ownership Adjustment Discussion
- V Silvicultural Guidelines for Visual Resource Management
- W Stevens, Thompson and Runyan Sewerage Study - Abstract
- X Economic Abstract
- Y Direct Capital and Operating Costs
- Z EPA Negative Declaration regarding Government Camp Sewage Treatment Plant Expansion

EXHIBIT A

G L O S S A R Y

AERIAL SYSTEMS

Logging methods which can lift logs to a landing area and support them free of the ground enroute. Some of the currently operational methods include: helicopters, balloons and certain skyline cable systems. Areas suggested for aerial systems are those not directly accessible by road or where road construction would cause adverse environmental impacts.

BIOMASS

The living weight supported by a given ecosystem or area. This calculation permits comparison between any species and allows relative carrying capacities to be considered.

BIOTA

The plants and animals of a region.

BUFFER ZONE

A buffer generally refers to a strip or area of land existing adjacent to or between land uses. Its purpose is to insulate the effects of one use from another. Management activities are usually modified to insure this insulation. Buffers may be established along roads, trails, streams and rivers; around wetlands and between farm and residential housing developments.

CLEARCUTTING

Cutting of all trees from an area of five acres or more.

COMMUNITY

All biological populations within the area in question.

Climax Community. A point in time when a given ecosystem (habitat) achieves a steady state. It is a community that is self-perpetuating and no other combinations of species is successful in outcompeting or replacing the biota forming the existing community.

Nonclimax Community. An ecosystem which is not stable and is in a constant state of succession (change from one type of ecosystem to another). Over a given period of time, greater varieties of plants and animals will exist in the nonclimax community than the climax habitat.

CLUSTER HOUSING

A housing pattern in which the individual units are arranged in groups or clusters within a development area. Cluster designs could include common wall or attached units (e.g. townhouses, triplexes) as well as detached, single family dwellings.

COMMERCIAL FOREST LAND

Forest land capable of bearing merchantable timber, currently or prospectively accessible and not withdrawn from such use.

COMPUTER MODEL

The term computer model has reference to a linear programming computer model which was one of the analytical tools used by the planners. This particular model was used in testing the comparative ability of different land use activities to meet multiple objectives (i.e. relating to timber yield, housing construction, recreation visitors, sediment, agricultural output, etc.) within the planning unit. The model was also used to calculate certain outputs (i.e. housing units, recreation visitor days, etc.) that would result from implementing selected combinations of land use activities and to test the sensitivity of these outputs to different land uses.

Computers were used for other types of analysis, i.e. highway traffic projections (State Department of Transportation), Analyses of public input, coefficients for managed timber yield tables, etc.

CRUISING RADIUS

See Home Range.

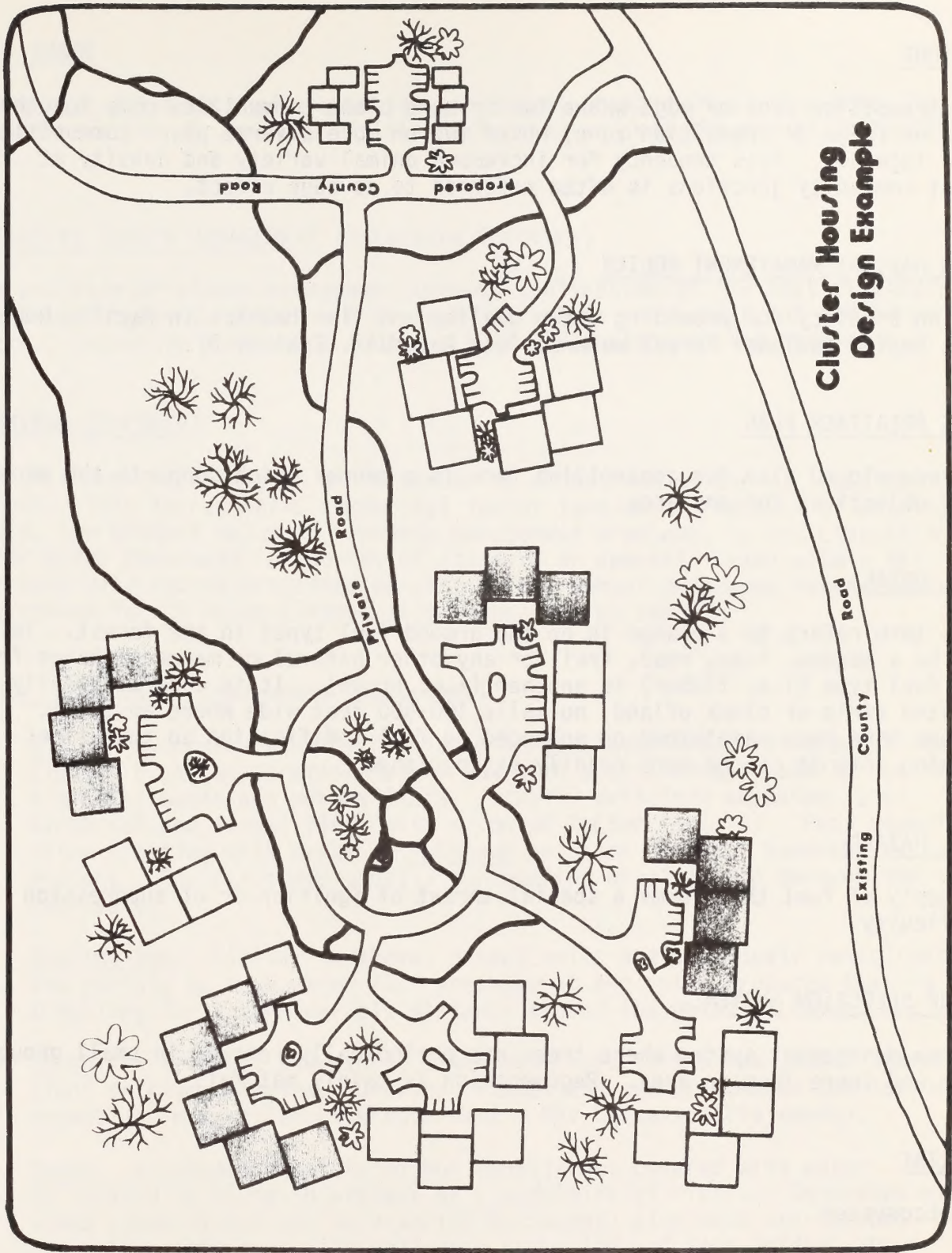
DWELLING UNIT

A living space designed for single family occupancy.

ECOSYSTEM

The interaction of biotic (biotic community) and abiotic elements within a given area. This term is synonymous with habitat. An ecosystem is generally thought of as a definable area (e.g. shrub community or ecosystem, grassland community or ecosystem, etc.) which represents inter and intra specific interactionism of cycling biotic (living and nonliving or organic features and abiotic (nonorganic) components which are needed to continue survival (active living, growing and reproduction) of a population of organisms over an extended period of time (e.g. for the life of any given seral stage) without renewal from the outside.

Cluster Housing Design Example



ECOTONE

The transition zone or edge where two or more plant communities come together. An area (edge or transition zone) where two or more diverse plant communities join together. This tendency for increased animal variety and density at plant community junctions is often referred to as edge effect.

FISH HABITAT MANATEMENT POLICY

Region 6 policy for providing water quality and fish habitat in Pacific Northwest Region National Forest waters, (see Appendix, Exhibit D).

FIRE PREATTACK PLAN

A predeveloped plan for controlling fire in a manner which supports the management objectives for any area.

FUEL BREAK

This term refers to a change in on the ground fuel types in the forest. This may be a meadow, lake, road, trail or any other natural or manmade change from one fuel type (i.e. timber) to another (i.e. brush). It is a strategically located strip or block of land, normally 100-500 feet wide where aesthetic values have been maintained or enhanced by fuel modification so that fires burning into it can be more readily extinguished.

FUEL HAZARD

A supply of fuel that forms a special threat of ignition or of suppression difficulty.

GROUP SELECTION SYSTEM

A tree management system where trees are periodically removed in small groups here and there from an area. Regeneration is mainly natural.

HABITAT

See Ecosystem.

HELISPOT

This is an area that is provided for helicopter landing but has no on the ground access byroads. It requires a cleared area 50 feet in diameter and clear approaches at a 45 degree vertical angle.

HOME RANGE

The normal distance a given species can travel or move in a given time; in this case a 24 hour period. It also refers to an area the animal is familiar with.

INTENSIVE TIMBER MANAGEMENT (Intensive Forestry)

The practice of timber management through application of the best silvicultural techniques to obtain a high level of volume and quality of timber products. Intensive management includes full utilization of the resources

MARGINAL COMPONENT

One of three components in which timber is classified on the Mt. Hood National Forest. This is regulated commercial forest land which, because of development costs, low product value or resource management problems, is not classified under other component categories of standard or special. Land within this category will not be programmed as part of the annual programmed harvest unless the reason for it being classed as marginal can be removed.

MARSH, BOG, SWAMP (Hydrosere Ecosystems)

Bog. A hydrosere usually developed in glaciated areas where precipitation is high, evaporation fairly low with poor drainage usually due to a glacial basin and porous lands. Usually deficient aeration, poor bacterial and fungal flora with a low pH factor (acidic). Peat deposits, often floating with dedge or Sphagnum mats and shrubs. Hummocks usually present. Conifer trees usually surrounding or dispersed through the hydrosere.

Quaking-Bog. Similar to above, except soils are so loosely consolidated and contain so much water that pressure at one point produces shaking and trembling for a considerable distance around the point of impact.

Marsh. A treeless hydrosere, often developed in shallow ponds, depressions or river margins. Grasses, rushes and sedges compose the dominant vegetation, monocotyledons predominant. May be seasonally ponded.

Swamp. A hydrosere saturated but usually not covered with water. May be located in sluggish streams or floodplains of rivers. Dominated with trees (usually but not necessarily deciduous) plus moss and shrubs. Drainage better than bogs with soil more compacted and less acidic. May succeed a marsh ecosystem.

Modified Wet Areas. Hydrosere areas which have been modified by man and do not fit one of the above ecological classifications.

"Local county planning and zoning policies (upheld by state and regional land use direction) declare marsh and other wetland areas off-limits for development and density transfer calculations. The objectives are to preserve wetlands as wild areas and maintain their functional values as regulators of

water quality and quantity and as important resources for overall environmental health and species diversity. This avoids future liabilities and corrective expenditures for the public, minimizes nuisance-like impacts on surrounding lands and furthers consumer protection and public safety."

MASS WASTING

A general term for a variety of processes by which masses of earth material are moved by gravity either slowly or quickly downslope.

NICHE

While the habitat of an animal indicates where it lives, the niche represents the position or status of that animal in the habitat.

NONCOMMERCIAL FOREST LAND

All forest land not qualifying as commercial forest land and includes (1) commercially valuable forest land withdrawn from timber use such as parks, special areas, refuges, etc. and (2) forest land which will not produce trees of commercial quality.

PAOT

Persons at one time.

PERIPHERAL

At the edge of its natural range of habitat and is living in a stress situation.

PERMEABILITY

The capability of soil or rock to transmit water.

PLANNED UNIT DEVELOPMENT (PUD)

A land development technique in which the project area is comprehensively planned as an entity or unit and the primary land uses are residential and open space. It permits flexibility in building siting, mixtures of housing types, usable open space and preservation of natural features. A much freer and more sensitive placement of structures on the land than conventional lot by lot subdivision is a usual result. Frequently this provides savings in development costs. Project elements -- housing, roads, open spaces, recreational and other nonresidential uses -- are essentially interrelated with one another. Densities are calculated within the zoning on a project basis (i.e. the net amount of acreage suitable for buildings and/or on-site sewage disposal), allowing the "clustering" or grouping of housing and related structures to create open

space and preserve natural site features. The required open space can be owned by the public or in common among the residents of the development. Both Clackamas and Hood River Counties have ordinances for administering the PUD approach to development.

POINT AND NONPOINT POLLUTION

Pollution which originates at a single identifiable source such as a sewage treatment plant is known as "point." Erosion and sedimentation are examples of nonpoint pollution.

RIPARIAN

A term to denote plants and animals which live along or frequent the banks of lakes, ponds, streams and rivers.

RIVER MILE

Distance from the mouth of a stream expressed in miles.

REGENERATION

The renewal of a tree crop, whether by natural or artificial means.

ROAD STANDARDS

Single Lane. A road designed and built for all weather multipurpose use with a design speed of less than 25 miles per hour. It will fit the natural terrain as much as possible; clearing and road widths to be minimum.

Double Lane. A road designed and built for all weather multipurpose use with a design speed of less than 30 miles per hour. It will fit the natural terrain as much as possible; clearing and road widths to be minimum.

ROTATION AGE

The age of a tree at which it is harvested. It indicates the time required to produce the general size and character of the principal product desired.

SERE (Seral Stage)

Ecological succession is the orderly process of community change. It is the sequence of communities which replace one another in a given area. The whole series of communities which develop in a given area are called the sere. The relatively transitory communities are called seral stages or seral communities with the final or mature communities being the climax community.

SHADED FUEL BREAK

This term refers to a man made fuel break involving removal of hazardous debris or brush from an area, while leaving a residual stand of trees to provide shade. The normal method of hazard reduction is by burning at a favorable time.

SILVICULTURE

The cultivation of forest crops based on a scientific understanding of the growth characteristics of trees in their environment.

SLUDGE

A liquid containing contaminants removed from wastewater by physical, biological and chemical treatments.

SNAG

Any standing dead tree or portion of the stem of a standing dead tree with a minimum DBH of ten inches and maximum height of ten feet.

SPECIES DIVERSITY

Generally refers to having a quantity of different species or kinds of plants, animals or other life forms within a given area.

STREAM CLASSIFICATIONS

Class I Stream. Perennial or intermittent streams or segments thereof that have one or more of the following characteristics:

1. Direct source of water for domestic use or fish hatcheries.
2. Used by large numbers of fish for spawning, rearing or migration.
3. Flow enough water to have a major influence on water quality of a Class I stream.

Class II Stream. Perennial or intermittent streams or segments thereof that have one or both of the following characteristics:

1. Used by moderate, though significant numbers of fish for spawning, rearing or migration.
2. Flow enough water to have only a moderate and not clearly identifiable influence on downstream quality of a Class I stream or have a major influence on a Class II stream.

Class III Stream. All other perennial streams or segments thereof not meeting higher class criteria.

Class IV Streams. All other intermittent streams or segments thereof not meeting higher class criteria.

STREAMSIDE MANAGEMENT UNIT (SMU)

The stream and an adjacent area of varying width where practices that might affect water quality, fish and other aquatic resources are modified as necessary, to meet SMU goals for each class of stream.

SURVEILLANCE BURNING

A fire management technique through which the decision to suppress a given wild-fire is continually reevaluated and, if necessary, modified based on its potential threat of damage to high value or unique land or commercial resources. This determination is reached by assessing the current and anticipated fire behavior as influenced by weather, fuel and topographic conditions.

SURVIVAL

A term referring to an animal population which is actively living, growing and reproducing in a given area.

VISUAL (SCENIC) QUALITY OBJECTIVES (Landscape Distance Zones)

Goals for management of the visual resource which describe various degrees of natural landscape character modification. These standards are determined by combining Sensitivity Level (visitor interest) and the natural landscape variety class.

Preservation of Character. Provides ecological change only. Used for wilderness or other similar special areas.

Retention of Character. A management activity would not change the essential quality of the existing dominance factors of form, line, color or texture.

Partial Retention of Character. A management activity may be evident and may visually change the essential quality of the existing landscape. However, these changes must be subordinate to the visual strength of the characteristic landscape.

Modification of Character. Management activities may dominate the original characteristic landscape but must borrow from natural factors of form, line, color and texture so that the visual characteristics are those of similar natural landscapes. A natural appearing composition or design.

Maximum Modification. Management activities may subordinate the original characteristic landscape. When viewed as foreground or middleground, the activity may not appear to borrow from natural factors. When viewed as background, it would appear as part of the overall natural composition.

Foreground. Generally, a distance from the observer out to about one-quarter mile. The foreground is the area in which details of texture, pattern and vegetation can be observed. In most cases on the westside of Mt. Hood Forest, the typical vegetation and land form limit the foreground to about 300 feet from the observer.

Middleground. The intermediate landscape distance, generally from one-quarter mile out to three to five miles. Here, the various parts of the landscape can be seen joining together. Details of vegetation disappear and merge into a texture.

Background. The distant landscape, generally from three to five miles out to infinity. The landscape becomes simplified into gross patterns of shapes, drainages, land masses and greyed colors.

WATER TURBIDITY

The turbidity of a water sample is a measure of the ability of suspended and colloidal materials to diminish the penetration of light through the sample.

WILDERNESS

The Wilderness Act of 1964 defines Wilderness as follows:

"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act, an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic or historical value."

WILDERNESS STUDY AREA

This is an area of undeveloped National Forest land selected by the Forest Service as having a high priority for further study for possible addition to the National Wilderness Preservation System. These areas are not the same as primitive areas. New Study Areas will be managed to protect their wilderness characteristics until

detailed studies can be completed and a recommendation is accepted as to their classification for wilderness or other purposes. No actions will be undertaken in New Study Areas that will change their wilderness characteristics, including harvesting timber, building roads, vegetative type changes or constructing other permanent improvements that would not be allowed in established wilderness. For further information see Forest Service Manual 8261.1.

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EXHIBIT C



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

OREGON STATE OFFICE
P.O. Box 2965 (729 N.E. Oregon Street)
Portland, Oregon 97208

IN REPLY REFER TO:

1792 (911)

DEC 8 1975

NH NH

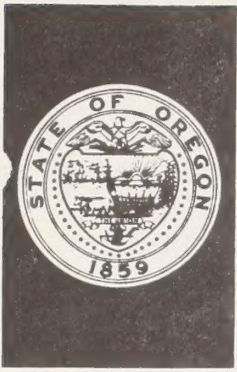
Mr. John B. White, Planning Coordinator
Mt. Hood National Forest
2440 S.E. 195th Avenue
Portland, Oregon 97233

Dear Mr. White:

Since the majority of the land and the principal actions being considered in the Mt. Hood Planning Unit are on National Forest lands, the Bureau of Land Management concurs that the Forest Service be the lead agency for the Mt. Hood Inter-Agency Land Use Plan as it applies to Federally administered lands. As such the Supervisor of the Mt. Hood National Forest will be the designated responsible official for the Environmental Impact Statement.

Sincerely yours,

E. J. Peterson
Acting
State Director



OREGON STATE HIGHWAY DIVISION

HIGHWAY BUILDING • SALEM, OREGON • 97310

ROBERT W. STRAUB
GOVERNOR

F. B. KLABOE
Administrator of Highways

November 24, 1975

ACTION	
✓	INFO
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	RAL
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	LUP
	B&F
	Res
	JC
	DA
	TO #1
	TO #2
	TO #3

Mr. Wright T. Mallery
Forest Supervisor
Mount Hood National Forest
2440 SE 195th Avenue
Portland, Oregon 97233

Dear Mr. Mallery:

Our office has reviewed the Draft Environmental Impact Statement for the Mount Hood Planning Unit in Clackamas and Hood River Counties, Oregon. In our opinion, the plan as stated will not adversely affect existing or potential historic or archeological resources. However, we would like to offer several suggestions to further protect cultural resources.

On page six of the draft statement, several historical sites are listed as important within the area. Steps should be taken to nominate these resources to the National Register of Historic Places. On page 93, the report mentions that historical and archeological sites and areas will continue to be inventoried and evaluated within the area. The best way to inventory and evaluate the cultural resources of the area is to conduct archeological and historical surveys using persons competent in these fields of expertise.

Thank you for the opportunity to comment on your statement.

Sincerely,

Paul B. Hartwig RK5
Paul B. Hartwig
Historic Preservation Coordinator

PH:ko

EXHIBIT E

MEMORANDUM OF UNDERSTANDING BETWEEN THE AGENCIES PARTICIPATING IN THE STUDY OF THE MT. HOOD PLANNING UNIT

As population grows and leisure time increases, the demand for recreation facilities in Oregon is increasing rapidly. In the areas accessible from Portland this increase in demand is even more pronounced as urban dwellers in increasing numbers seek to "get away from it all".

Much of the pressure for expansion of facilities, both for temporary users and for permanent homesites is being exerted on the Mt. Hood area, especially along Highways 26 and 35. In addition to recreation facilities, this area is a significant source of timber that provides an important part of the economic base for the surrounding communities. The Mt. Hood area is also a watershed for many individual homes and communities and has numerous historical sites that are relatively accessible and of interest to many people.

Mt. Hood is not just of local significance; National, regional and State needs also exist that must be taken into consideration in the management of the area. For this reason, as well as the complexity of increasing demands for resources, it is important that the area has a uniform comprehensive plan for growth land use; the results of unplanned growth in some parts of the Mt. Hood area have already created problems.

With the overlap of jurisdictions by Federal, State and county and community agencies, it is necessary to have a coordinated effort by all of these agencies in planning rather than to have individual agencies produce plans which might conflict. For this reason the following agencies have formed an interagency planning team to continue and elaborate upon existing planning programs in the Mt. Hood Planning Unit, and develop an interagency comprehensive land use plan.

Bureau of Land Management
Clackamas County
Columbia Region Association of Governments
Hood River County
Mid-Columbia Economic Development District
Mt. Hood National Forest
State of Oregon Forestry Department

An Executive Committee has been formed to provide direction to the planning team and to approve and recommend for information the resulting interagency plan. This committee consists of the following agencies:

Bureau of Land Management
Clackamas County
Hood River County
Mt. Hood National Forest

Description of Area

The Mt. Hood Planning Unit consists of approximately 149,000 acres, including the U.S. Highway 26 corridor east of Cherryville, south to the Hunchback Mountain-Devil's Peak-Sherar Burn Ridge, north to Lolo Pass and the Mt. Hood

Wilderness Area and east to include the State Highway 35 corridor and the East Fork of the Hood River Valley to the National Forest boundary, about six miles south of Parkdale. The Planning Unit boundaries are subject to modification pending approval of the Executive Committee.

Goals of the Interagency Study

The purpose of this planning effort will be to provide a comprehensive plan that is acceptable to all agencies involved and can be implemented uniformly throughout the planning unit.

This plan will recognize that Mt. Hood, both east and west sides, is in itself an entity within which all aspects of man's activities must harmonize with each other. In order to achieve this purpose, the following initial goals have been agreed upon.

To identify certain economic and environmental values that are basic to Mt. Hood and the surrounding communities that must be retained, and to keep these values from being compromised.

To insure that the public has an active and meaningful role in the planning process.

To recognize the subtle and intricate relationships that exist in the ecosystems in the Mt. Hood area, and to sustain the high degree of environmental quality that is a major resource of the planning unit.

To provide a more accurate picture of local, regional and national public needs and expectations to all agencies making land use decisions in the area.

To provide an opportunity for a variety of forms of use, but insure that only those forms compatible with each other will occur within the same area.

In continuation of previous planning programs, to carry out environmental capacity studies which will determine physical and social carrying capacities under alternative forms and intensities of use. A determination will be made on environmental capacity for all lands within the planning unit.

To identify lands that might be managed better under different ownership and to decide upon a means of land consolidation that is equitable and acceptable to all parties involved.

To compile an intensive resource inventory that can be used by all agencies in making land use decisions.

Agency Responsibilities

BUREAU OF LAND MANAGEMENT

To serve on the Executive Committee.

To participate on the interagency planning team in the following manner:

To participate in the adoption and implementation of a plan or amendments to existing plans to the extent plans are consistent with BLM goals and funding levels and to make interim management decisions on BLM lands.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and to serve Ad Hoc review committees as outlined in the interim management policy in this agreement.

To act in an advisory capacity on timber management, recreation and other uses that occur on BLM lands, and to make available existing resource information needed to complete land suitability analyses and to test alternatives.

CLACKAMAS COUNTY

To serve on the Executive Committee.

To participate on the interagency planning team both as a private land owner and as an administrator of private land under county jurisdiction, in the following manner:

To participate in the adoption and implementation of a plan or amendments to existing plans when the study is complete on lands under County jurisdiction, and also to make interim decision on these lands.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and to serve on Ad Hoc review committee as outlined in the interim management policy in this agreement.

To assist in funding of a graduate student in Social Science from Portland State University who will solicit, compile and analyze public involvement and response, and to assist in financing publications.

Joint funding for the publications and assistance from Portland State for Clackamas County will be \$1500, for a two year period. This amount will not be exceeded without the expressed consent of the County Commissioners.

To provide staff assistance in planning and collection and analysis of data on current and proposed land use and soil suitability.

COLUMBIA REGION ASSOCIATION OF GOVERNMENTS

To participate on the interagency planning team as a representative of the local governments that are members of CRAG in the following manner:

To act in an advisory capacity on demographic, economic and soil trends that are occurring both within the planning unit and in the total region that affects and is affected by the events in the Mt. Hood area.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and serve on Ad Hoc review committees as outlined in the interim management policy in this agreement.

To assist in identifying and clarifying problems that arise out of the fragmented pattern of private and public ownership in parts of the planning unit.

To have an advisory role in the development of a public involvement process.

To apprise the planning team of significant Regional planning proposals that may affect or provide input to the Mt. Hood planning effort.

HOOD RIVER COUNTY

To serve on the Executive Committee.

To participate on the interagency planning team both as a private land owner and as an administrator of private land under county jurisdiction, in the following manner:

To participate in the adoption and implementation of a plan or amendments to existing plans when the study is complete on lands under County jurisdiction, and also to make interim decisions on these lands.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and to serve on Ad Hoc review committee as outlined in the interim management policy in this agreement.

To assist in funding of a graduate student in Social Science from Portland State University who will solicit, compile and analyze public involvement and response, and to assist in financing publications.

Joint funding for the publications and assistance from Portland State for Hood River County will be \$1500, for a two year period. This amount will not be exceeded without the expressed consent of the County Commissioners.

To provide staff assistance in planning and collection and analysis of data on current and proposed land use.

MID-COLUMBIA ECONOMIC DEVELOPMENT DISTRICT

To participate on the interagency planning team as a representative of the local governments that are members of MCEDD in the following manner:

To act in an advisory capacity on demographic, economic and social trends that are occurring both within the planning unit and in the total region that affects and is affected by the events in the Mt. Hood area.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and serve on Ad Hoc review committees as outlined in the interim management policy in this agreement.

To provide staff to produce an economic analysis of the area that can be used to develop and test land use alternatives.

To assist in identifying and clarifying problems that arise out of the fragmented pattern of private and public ownership in parts of the planning unit.

To apprise the planning team of significant regional planning proposals that may effect or provide input to the Mt. Hood planning effort.

MT. HOOD NATIONAL FOREST

To serve on the Executive Committee.

To participate on the interagency planning team as a public land owner in the following manner:

To assist in coordination of the planning activities.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and serve on Ad Hoc review committees as outlined in the interim management policy in this agreement.

To participate in the adoption and implementation of a plan or amendments to existing plans on National Forest lands when the study is complete, and also to make interim management decisions on such lands.

To assist in funding of a graduate student in Social Science from Portland State University who will solicit, compile and evaluate public involvement and response, and to assist in financing publications. The Mt. Hood Forest share of funding for the joint financing of the publications and assistance from Portland State University will be \$3000.

To be responsible for inventory and analysis of soils, geology, vegetation, visual characteristics and wildlife in the planning unit.

STATE OF OREGON DEPARTMENT OF FORESTRY

To participate on the interagency planning team both as a public land owner, and as a manager and advisor for county and private forest lands in the following manner:

To review for adoption and implementation of the plan or amendments to existing plans on State lands when the study is complete, and also to make interim management decisions on such lands.

To apprise the planning team of significant development proposals that may affect the outcome of the plan and serve on Ad Hoc review committees as outlined in the interim management policy in this agreement.

To provide resource information on non-Federal lands to the planning team that will be used in analyzing land suitabilities.

To act in an advisory capacity on timber management and other uses that occur on lands under State jurisdiction.

Interim Management Policy

The following proposal for interim management was agreed upon by the agencies having responsibility for administration of lands within the Mt. Hood Planning Unit:

"All significant development proposals within the Mt. Hood Planning Unit will be referred to the interagency planning team for review and recommendation by the member agency receiving the original proposal. The agency having approval authority for permitting development shall decide whether the proposal is significant."

The interagency planning team will complete its review and recommendation to the agency requesting the review within thirty days.

The interagency planning team will select an Ad Hoc committee to review each proposal.

Nothing herein shall be construed as binding the funding agencies for the payment of money beyond the current fiscal year unless a financial plan for subsequent years has been approved by each agency.

WE, THE UNDERSIGNED, AGREE TO PARTICIPATE IN THE DEVELOPMENT AND ADOPTION OF THE MT. HOOD INTERAGENCY COMPREHENSIVE PLAN AS DESCRIBED IN THIS MEMORANDUM OF UNDERSTANDING.

Archie D. Craft

State Director, Oregon State Office
Bureau of Land Management

Thomas D. Telford

Thomas D. Telford, Chairman, Board of County
Commissioners, Clackamas County

William H. Young

William Young, Chairman Executive Board of
Columbia Region Association of Governments

Jerry Routson

Jerry Routson, Chairman, Board of County
Commissioners, Hood River County

William H. Furrow

William H. Furrow, Chairman, Board of Directors,
Mid-Columbia Economic Development District

Wright T. Mallery

Wright T. Mallery, Forest Supervisor,
Mt. Hood National Forest

J. Edward Shroeder

J. Edward Shroeder, State Forester,
Forestry Department, State of Oregon

Bureau of Land Management
Clackamas County
Columbia Region Association
of Governments
Hood River County
Mid-Columbia Economic
Development District
Oregon State Forestry Department
U.S. Forest Service

MT. HOOD PLANNING UNIT

P.O. Box 16040
Portland, Oregon 97216

8200
November 20, 1973

AMENDMENT #1

MEMO OF UNDERSTANDING BETWEEN THE AGENCIES PARTICIPATING IN THE STUDY OF THE MT. HOOD PLANNING UNIT

In accordance with Executive Committee instructions of October 15, 1973,
please affect the indicated action.

Remove Pages 3/4 and 5/6.

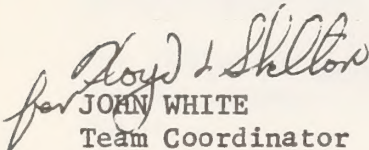
Insert Page I directly behind Contents Page.

Insert Pages 3/4, Chg. #1; and 5/6, Chg. #1.

Changes affected:

This amendment changes the language of the implementation and
adoption procedure of the plan. The effect is to strengthen
the Memo of Understanding and make it more consistent between
the four principal agencies.

Please complete and return the attached Page I-A.


JOHN WHITE
Team Coordinator
HOOD/INPUT

Enclosures

EXHIBIT F

MT. HOOD PLANNING UNIT

SUMMARY OF THE ANALYSIS OF PUBLIC INPUT ON THE PROPOSED OBJECTIVES

The Mt. Hood Planning Unit has been fortunate in receiving a considerable amount of public input addressed to the proposed land use planning objectives. Many individuals devoted much time and consideration in preparing their comments.

This summary offers a brief overview of the complete analysis of the public input that was received in the "citizen response forms" distributed by the unit. We must emphasize that this only is a summary of the analysis of public input and the reader is referred to the complete analysis for further information and details. The complete analysis is available for review at the following places: Clackamas County Planning Department, Hood River County Planning Department, and the Mt. Hood Supervisor's Office.

The citizen response form was formulated especially for the purpose of assessing public reaction to the twenty proposed objectives, or goals, for the Mt. Hood Land Use Plan.

Specifically, the survey of public opinion was designed to 1) test the validity of objectives formed from existing plans and policies as modified by the Citizen Advisory Committee, the Planning Team and the Executive Committee, 2) determine the strength of public opinion for each individual objective, and 3), determine if there are any additional important objectives that need to be considered. The final objectives will be used in developing alternative land use plans and to test the success of these plans.

The forms and an explanatory brochure were distributed during July and August, 1974. The deadline for public response was August 23, 1974. The objectives were listed on the form. The respondent was asked to circle the number that most closely corresponded to his or her view of the importance of each objective, where:

1. The respondent strongly supports the objective
2. The respondent agrees with the objective
3. The respondent has no opinion
4. The respondent disagrees with the objective
5. The respondent strongly opposes the objective
6. The respondent feels that the objective is inappropriate for the Planning Unit.

Besides this, space was provided beneath each goal for written comments and at the end of the form for additional objectives or comments. All public response was given equal consideration. There was no word or space limit.

More than 400 completed questionnaires were returned to the Mt. Hood Planning Unit. What conclusions about public opinion can be drawn from this response?

To begin with, one must be cognizant of what this response does not explain. It does not provide a clear statement of what objectives the public feels are of greatest importance since a priority ranking was not requested on the form.

Most importantly, the absence of a demographic method in the distribution of response forms preclude treating this report as a comprehensive account of citizen opinion concerning Mt. Hood land use planning.

We cannot over-emphasize the importance of not reading this paper as the results of a scientifically constructed public opinion survey. Distribution methods made it impossible to assure proportional distribution to and response from the myriad of social, economic and geographic interests affected by land use decisions. Furthermore, the amount of response was rather small. Only eight percent of the 5500 questionnaires that were distributed were returned. Only miniscule fractions of the populations of Hood River County, Clackamas County and the Portland metropolitan area responded.

Besides the absence of demographic sampling and the limited amount of returned forms, problems with the wording of the objectives disallow treating this report like a ballot count and even limit the reliability of standard statistical analysis. Many of the respondents pointed out that the objectives were often ambiguous, too general or were too complex to be answered by a few written lines, let alone a circled number. Consequently, there are a great number of responses where no number is circled or where the individual complained about this problem in his or her written comments. Others complained that nearly all of the objectives sounded so agreeable that one could easily circle the strong support response for each one even though one might disagree with policies undertaken to realize them. The overwhelmingly positive response to most of the objectives might partially corroborate this complaint.

In the analysis, it was necessary to generalize some remarks. In such cases there was a trade off between recording the rather wide diversity of opinion and summarizing the input in a coherent manner. If all the diverse comments had been recorded, the list would have been too large to be easily analyzed or evaluated. It is therefore, impossible to read the summary and state categorically, "x number of people wrote this about objective y".

Nevertheless, this report shall include a numerical summary of the response keeping in mind the limitations discussed above. This summary is useful in showing relationships between reactions to different objectives.

Though this summary of citizen response cannot answer certain questions concerning public opinion and though appropriate limitations must be made on the interpretation of the response that has been received, the public involvement efforts of the past few months have not been fruitless. The planning unit has received an appreciable amount of public comment on the proposed objectives. Much of it is quite thoughtful and well informed. Even though it is not advisable to read this report as election returns or as the results of a demographically sound survey, the response forms constitute a valuable log of public opinion.

OBJECTIVE ONE

A WIDE VARIETY OF PUBLIC AND PRIVATE RECREATION OPPORTUNITIES COMPATIBLE WITH THE MOUNTAIN ENVIRONMENT.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective Inappropriate (6)
Total	18	136	146	14	41	39	12

MAJOR REMARKS:

1. The principle for future development should be multiple use management. Develop the recreational potential of the area. (11) *
2. There should be some restrictions on the development of a "wide variety". The environment can't support all uses. (24)
3. Restrict further growth in general. Further growth will do damage to the environment. (26)
4. Restrict motorized, off-road vehicle opportunities. (12)
5. The main concern for the Planning Unit should be preservation of the environment. (24)

OBJECTIVE TWO

PROTECTION OF THE EXISTING MT. HOOD WILDERNESS; PROVISION OF ADEQUATE WILDERNESS LAND THAT MEETS WILDERNESS CRITERIA.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total	7	288	72	10	16	7	6

MAJOR REMARKS:

1. The size of the designated wilderness area should be enlarged. (33)
2. The respondent has specific proposals for additions to the designated wilderness area. (19)
3. Do not expand designated wilderness area. (23)
4. This objective is very high priority. (12)

* Numbers in parentheses indicate total number of respondents making that remark.

OBJECTIVE THREE

INTENSIVE TIMBER MANAGEMENT OF SUITABLE PRIVATE AND PUBLIC FOREST LANDS ON A SUSTAINED YIELD BASIS WHILE PROTECTING SCENIC, RECREATIONAL AND ECOLOGICAL VALUES OF THE MOUNTAIN ENVIRONMENT.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective Inappropriate (6)
Total	14	173	113	17	29	43	17

MAJOR REMARKS:

1. Reduce logging in general. (17)
2. Allow timber harvesting subject to nondegradation of the environment. (26)
3. Allow logging according to the best scientific information and see that the recreational, scenic and ecological values of the area are preserved. (10)
4. Limit clearcutting. (13)

OBJECTIVE FOUR

RETENTION OF THE UNIQUE VISUAL CHARACTER AND SCENIC VARIETY ASSOCIATED WITH THE MOUNTAIN LANDSCAPE. SPECIFICALLY AVOID STRIP DEVELOPMENT.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total	7	295	75	10	11	5	3

MAJOR REMARKS

1. Stop further strip development. (18)
2. Limit additional development. (10)

OBJECTIVE FIVE
PROTECTION, MAINTENANCE AND ORDERLY RESTORATION OF AIR, WATER
AND SOIL QUALITIES.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective is Inappro- priate (6)
Total 6	275	98	14	3	4	6	

MAJOR REMARKS:

1. No restoration is needed. Water and air quality is already high. (9)
2. Close monitoring of high standards of quality is necessary. Strict enforcement is needed. (9)

OBJECTIVE SIX

PROTECTION OF WATER RESOURCES TO ASSURE AND MAINTAIN A LONG RANGE
ADEQUACY OF SUPPLY FOR BOTH CONSUMPTIVE AND NONCONSUMPTIVE USE.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 6	298	86	7	1	2	6	

MAJOR REMARKS:

1. The Objective is important for the continued livability of the area. (6)
2. Review impact of logging and development on water supply. (5)
3. Do not allow any dam construction. (5)
4. This objective is very high priority. (5)

OBJECTIVE SEVEN

PROTECTION OF ALL WET LANDS, STREAMSIDES, MAJOR STREAM CORRIDORS AND
FLOODPLAINS AS CRITICAL ENVIRONMENTAL RESOURCES.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 7	265	80	17	24	5	8	

MAJOR REMARKS:

1. These areas are critical environmental resources. (11)
2. Restrict camping, development, drainage and logging in these areas. (13)
3. This objective is very high priority. (12)

OBJECTIVE EIGHT

IDENTIFICATION, PROTECTION AND MAINTENANCE OF SIGNIFICANT HISTORICAL AND
ARCHAEOLOGICAL SITES AND STRUCTURES (e.g. Timberline Lodge and the Old
Barlow Road, etc.)

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective is Inappro- priate (6)
Total 4	256	120	12	9	2	3	

MAJOR REMARKS:

1. Preserve historical landmarks for posterity. They are a valuable part of our heritage. (9)
2. How is the significance of historical sites defined? Be cautious. (7)
3. Protect Timberline Lodge. (7)

OBJECTIVE NINE

PROTECTION AND PROVISION OF ADEQUATE HABITAT FOR WILDLIFE SPECIES NATIVE
TO THE AREA.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 6	280	98	8	9	2	3	

MAJOR REMARKS:

1. Protect habitats by restricting timber sales and development. Increase designated wilderness area. (10)
2. This objective is very high priority. (12)

OBJECTIVE TEN

CONSERVATION OF FARMLAND AS AN IMPORTANT ECONOMIC AND SCENIC RESOURCE.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 9	215	124	31	15	7	5	

MAJOR REMARKS:

1. Save productive farmland. (17)
2. Save only economically sound farmland. (13)
3. Limit further subdivision and development of farmland. (17)
4. This objective is unnecessary and redundant. (11)

OBJECTIVE ELEVEN

MAINTENANCE OF ENVIRONMENTAL QUALITY IN INSTANCES WHERE USE OF ENERGY AND MINERAL RESOURCES IS PERMITTED.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective is Inappropriate (6)
Total	20	209	125	25	9	9	9

MAJOR REMARKS:

1. Mining disrupts the ecology; it should be banned from the area. (20)
2. Only mining that does not damage the environment should be allowed. (31)
3. The objective is too abstract, general or may result in the implementation of policies that I disapprove of. (13)

OBJECTIVE TWELVE

MAINTENANCE OF THE CONDITIONS WHICH PRESENTLY MAKE THE PLANNING AREA DESIRABLE FOR USE THROUGH LIMITS ON THE NUMBER OF PEOPLE AND THEIR RELATED ACTIVITIES AND FACILITIES.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total	19	212	101	20	24	21	9

MAJOR REMARKS:

1. Limits are hard to determine and enforce fairly. (11)
2. Plan wisely to allow for further growth instead of limit use. There is still capacity for orderly growth. (16)
3. This objective is very high priority. (10)

OBJECTIVE THIRTEEN

A MORE STABILIZED ECONOMY.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective is Inappropriate (6)
Total	22	110	108	90	17	12	47

MAJOR REMARKS:

1. This goal might possibly conflict with other goals since it might encourage more development and logging. (24)
2. The planning unit's main concern should be for the environment, not the economy. (15)
3. The objective is too abstract, general or may result in the implementation of policies that are disapproved of. (24)

OBJECTIVE FOURTEEN

COMMUNITIES WITHIN THE PLANNING UNIT MAINTAIN INDIVIDUALITY, PHYSICAL SEPARATION AND DIVERSITY OF CHARACTER AS RELATED TO THE MOUNTAIN SETTING.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total	15	151	147	39	19	14	11

MAJOR REMARKS:

1. "Sense of Community" must be compatible with the environment and the plan. (18)
2. Present communities must develop a "sense of community". (9)
3. Limit growth in general. (9)
4. This goal is hard to achieve. (9)

OBJECTIVE FIFTEEN

ORDERLY DEVELOPMENT OF A TRANSPORTATION SYSTEM BALANCED TO MEET AREA NEEDS AND COMPATIBLE WITH THE MOUNTAIN ENVIRONMENT.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective is Inappropriate (6)
Total	16	136	152	37	21	28	16

MAJOR REMARKS:

1. Improved transportation might open the area up to overdevelopment. (16)
2. Develop mass transit. (33)
3. Restrict auto-oriented transportation (such as roads, parking lots, etc.) (44)

OBJECTIVE SIXTEEN

PROVISION FOR A VARIETY OF HOUSING THAT MEETS COMMUNITY NEEDS WHILE BLENDING WITH THE NATURAL BEAUTY AND RESOURCES OF THE MOUNTAIN LANDSCAPE.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective Inappropriate (6)
Total 23	93	135	40	32	57	21	

MAJOR REMARKS:

1. Limit the amount and the intensity of more development. (53)
2. Limit further large scale development. (12)
3. Limit housing according to environmental, scenic and the plan's restrictions. (16)

OBJECTIVE SEVENTEEN

PROVISION FOR ADEQUATE BUSINESS AND COMMUNITY SERVICE FACILITIES COMPATIBLE WITH THE MOUNTAIN CHARACTER AND CONSISTENT WITH ENVIRONMENTAL CAPACITY.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 20	94	163	33	35	41	20	

MAJOR REMARKS:

1. Allow only an essential minimum of businesses. (20)
2. Limit all development. (43)
3. Development should fit into environmental capacity. (14)

OBJECTIVE EIGHTEEN

ESTABLISHED BUSINESS AREAS AND AREAS PREVIOUSLY SUBDIVIDED AND SUITABLE FOR HOUSING HAVE PRIORITY FOR NEW DEVELOPMENT.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 21	91	132	47	47	51	19	

MAJOR REMARKS:

1. Limit development in these areas. (41)
2. Allow only development that is compatible with the scenery, ecology and the plan. (14)
3. Limit all new development. (27)

OBJECTIVE NINETEEN

EFFECTIVE PLAN IMPLEMENTATION, INCLUDING ADEQUATE FUNDING. AGENCIES WILL WORK TOGETHER IN REVIEWING, MONITORING AND ENFORCING RESULTING POLICIES, STANDARDS AND ORDINANCES.

	Not Stated (0)	Strongly Support (1)	Agree (2)	No Opinion (3)	Disagree (4)	Strongly Oppose (5)	Objective Inappropriate (6)
Total 27	176	145	31	9	12	6	

MAJOR REMARKS:

1. A comprehensive plan (not modified by special interest groups) and strict enforcement of the plan are necessary. (11)
2. Too many agencies are involved. Limit the bureaucracy. (7)
3. Cooperation on a Regional basis is important. (7)
4. Citizen input is necessary. (7)
5. This objective is very high priority. (8)

OBJECTIVE TWENTY

OPPORTUNITIES FOR CITIZEN PARTICIPATION IN THE PREPARATION, IMPLEMENTATION AND REVIEW OF THE MT. HOOD INTERAGENCY PLAN.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Total 16	273	93	9	5	3	7	

MAJOR REMARKS:

1. Citizen participation must be effective and should be broad based. It should not be an opportunity for special interest groups. (41)
2. The Planning Unit citizen involvement efforts must be innovative. Adequate communication is important. (10)

ADDITIONAL COMMENTS

1. The survey is a good idea; the Planning Unit is doing a good job. (11)
2. The objectives are vague, general or are not clear in what they imply. (15)
3. Land must be comprehensively planned to remain desirable for all. (12)
4. Limit all further growth on the mountain. (23)
5. Protect wilderness and back country areas. (12)
6. Make greater provisions for horse-oriented recreation (more trails, watering holes, etc.) (12)

CONCLUSIONS

It was difficult to summarize the public input contained in the citizen response forms. The written comments addressed to some of the individual objectives posed knotty enough problems for analysis. For a better understanding of the total input, the reader is referred to the complete analysis. Nevertheless, it is possible to draw a few conclusions about public opinion concerning the Mt. Hood Planning Unit as expressed in the questionnaires.

The most widespread sentiment seems to be that unbridled development of the area must cease. The relative negative response to the sixteenth, seventeenth, eighteenth objectives dramatically registers this. Public concern over excessive growth arises from two sources. One is the opinion that the mountain environment cannot shoulder the burden imposed upon it by too much use. The importance of preserved environmental quality is expressed in the strong public support for the fifth, sixth and seventh objectives. The other source of concern is that the untempered economic, commercial and recreational growth will lead to conflicts between uses.

Both concerns lead people to the conclusion that decisions must be made about what uses of the mountain should have the highest priority. This is where conflict arises. This conflict is represented in the written response to the objectives.

For example, though most people agree in the first objective, that mountain recreational opportunities must be preserved, there are a great number of different suggested restrictions on recreation. Also, in spite of their desire for recreational activities, a great number of people seem willing to accept limits on the uses of the mountain. By accepting limits, they hope to insure the continued quality of their recreational experience. (See objective twelve.) The question of priority of uses arises in discussions of timber harvesting (in objective three) of energy and mineral mining (objective eleven) and housing and commercial development (in objective sixteen and seventeen). In the written responses to each of these, the recurrent debate centers over environmental damage that may result from the implementation of the goal as well as a questioning of the priority of each objective.

Having identified some of the broad concerns evident in the general aggregate of public input, it is fruitful to inspect specific reactions to the objectives. As mentioned above, the fifth, sixth and seventh objectives, which deal respectively with maintenance of environmental quality, protection of water resources and protection of wetlands, received very strong support. Closely related to this group of goals are the second, fourth and ninth objectives which received similarly strong support. The fourth goal calls for the preservation of the mountain's scenery, the second advocated protection of the Mt. Hood Wilderness Area and the ninth concerns itself with the protection of wildlife. The positive response to all of these objectives owes to the conviction expressed in the written comments that the environment and the present quality of much of the Mt. Hood Area should be preserved.

The thirteenth, sixteenth, seventeenth and eighteenth objectives deal with economic development. The numeric support for all of these, considerably lower than the support shown for other objectives. The general line of written comment is that, though a stabilized economy, adequate housing and adequate community development are important, the adoption of these goals may lead to excessive economic development or undesirable governmental interference with the economy.

Also related to the economy are the third and eleventh goals which deal with timber harvesting and mineral and energy development. Here, the concern is that excessive levels of activity will lead to environmental degradation or will impinge upon other uses of the mountain.

As mentioned before, there is a consensus expressed in the response to the first objective, that recreational opportunities must be preserved. However, support is qualified on the condition that the mountain does not become over-developed. To insure against over-development, the support for the twelfth objective indicates that limits on the use of the mountain will be tolerated.

There is a collection of four other goals dealing with comparatively discreet issues. Support is strong for preserving historical and archaeological sites (objective eight) and farmland (objective ten). Objective fourteen advocates preserving the identities of the different mountain communities. There is a general degree of support for this goal, but many people wonder what is involved in its implementation.

Even though the numeric support for objective fifteen was not comparatively strong, an overwhelming amount of people wrote in that mass transportation and alternatives to the automobile must be developed.

The final two objectives deal with the implementation of the land use plan. Support for implementation and enforcement of the plan is expressed in the response to the nineteenth goal. However, quite a few individuals are concerned over excessive government power. The response to the twentieth goal indicates strong support for citizen participation in the planning process.

The remarks and objectives added at the end of the form touch on a wide variety of issues. Many people are pleased with the Planning Unit's efforts. However, many complain about the abstract wording of the planning objectives. Besides these comments, a number of general land use objectives were proposed. Some of the more frequently mentioned objectives were:

1. A comprehensive land use plan is necessary.
2. Further development of the mountain should be limited.
3. Use should be made of the mountain's natural resources.
4. The scenery and ecology of the mountain should be protected.
5. Government power should be limited.

In addition to these general proposals, there was a large collection of specific land use policies. Two oft-repeated ones were that provisions should be made for horseback riding and that the designated wilderness area as well as other back-country areas should be protected.

A general table of results was not prepared because the issues involved in most of these objectives were too complicated to be addressed in numbers alone and to prevent review of the analysis as a vote count. The diversity and the informed nature of much of the comment demands a perusal of the written response to each of the objectives. We encourage all those interested to review the complete analysis of public input.

EXHIBIT G

SUMMARY OF THE PUBLIC RESPONSE TO THE MT. HOOD PLANNING UNIT FUTURES

The following is a summary of the analysis of public response to the Mt. Hood Planning Unit Futures. The Futures (land use alternatives) were described in a brochure that was distributed to the public during March 1975. The brochure contained a response form in order to facilitate replies. This summary offers a brief overview of the complete analysis of the public input that was received on the response forms. We must emphasize that this is only a summary of the analysis of public response and the reader is referred to the complete analysis for further information and details. The complete analysis is available for review at the following places: Clackamas County Planning Department, Hood River County Planning Department and the Mt. Hood National Forest Supervisor's Office.

Over 3200 brochures were printed and distributed to various individuals, organizations and local, state and federal agencies. Five hundred forty-one (541) response forms were returned.

The response form was formulated especially for the purpose of assessing public reaction to the management Futures described in the brochure. It was designed specifically to determine the following:

1. Which Futures were most supported by respondents.
2. Which features or elements of the Futures had the strongest or least support.
3. Which users of the Planning Unit had responded and what was their Future preference.
4. Were an adequate range of land use alternatives being considered.
5. Were all user views heard from.

Respondents were asked to indicate on the form what Future they preferred, what elements (i.e. Agriculture/Forestry, Housing, etc.) they liked or disliked, what areas of the Planning Unit they used and what activities they participated in. There was also space provided to write out a new Future and space for other comments. There was no word or space limit. Some respondents returned multipage comments. All public response was given equal consideration and each was fully recorded.

A few words of caution about the analysis: It is not based on a demographically sound survey. It should not be construed as a one-man, one-vote return. Rather, this analysis attempts to condense and record the varied opinions and comments of all respondents.

The Mt. Hood Planning Unit would like to express their appreciation to all citizens, agencies and organizations who took the time to return the "Futures" response form. Much of the comment was thoughtful and well informed. We feel that the complete analysis provides a valuable log of public opinion and encourage all those interested to review it.

I. Geographic Distribution of Respondents

The majority of respondents were from Multnomah and Clackamas Counties (43% and 24% respectively). Seven percent of the respondents were from Hood River County and 6% were from Washington County. The remaining 10% were from other areas in Oregon, Washington and other states.

II. Alternative Future Preferred

Space was provided on the response form to indicate generally which Future was most preferred. Of the 541 total respondents, 469 respondents checked one or more of the Futures as being preferred. The following shows the percentage of respondents indicating a preferred Future.

Future 1 - 2%
Future 2 - 28%
Future 3 - 43%
Future 4 - 4%
None of the Futures - 19%
Combination of Futures - 4%

Respondents were given the opportunity to indicate preferences for specific aspects or elements of the Futures (i.e. housing, recreation, transportation, etc). Detailed information on these responses is included in the complete analysis.

III. Comments

Respondents offered a variety of comments to the "Futures" and on the future management of the Planning Unit. The following comments are some of those most frequently mentioned:

Maintain agricultural lands.
Maximize timber harvest.
Protect scenic values.
No further housing or commercial development.
Limit new housing development.
No new wilderness.
Maximize wilderness.
Control planned recreation development.
Preserve wildlife - protect habitat.
No new power corridors.
Encourage mass transit.
No further highway development.
Improve sewers, water systems and solid waste disposal as needed.
Allow wildfire to play a natural role.
Improve and provide schools and fire and police protection as needed.
Tax according to land use.
Need for local representatives in administration.
Stricter local control needed.

Space was provided for respondents to indicate what values they felt to be most important in the Planning Unit. Some of the most frequently mentioned were

recreation, timber, wilderness and scenic beauty. Respondents also offered a variety of other comments which included "Leave Mt. Hood as natural as possible," "Control growth," and "Recreation should be a major land use with a stress on public access."

IV. Recreation Uses

On the response form, people were asked to indicate which recreation activities they participated in in the Planning Unit. The following shows the percentage of the total number of respondents participating in individual activities.

Hunting - 15%	Snowmobiling - 3%
Camping - 54%	Downhill skiing - 30%
Motorbike - 2%	Hiking - 58%
Golf - 9%	Horse - 8%
Fishing - 41%	Nonmotorized winter sports - 30%
Picnicking - 48%	Other (Off-road vehicle use, photography, etc.) - 30%

Many respondents said they took part in several different activities.

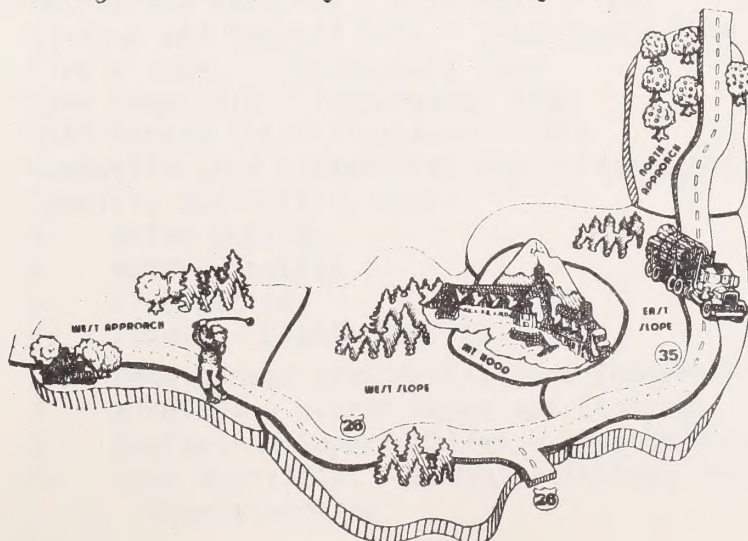
V. Work and Residence

Respondents were also asked to indicate on the response form if they worked or lived in the Planning Unit. Five percent of the respondents said they worked on a farm or orchard, 16% worked in the forest, 12% worked in a business or service capacity and 13% indicated some other kind of work.

Thirty percent (30%) of the respondents said they had a seasonal (13%) or permanent (17%) residence in the Planning Unit while 3% don't use the Planning Unit.

VI. Areas Used

The most frequently mentioned area used in the Planning Unit was the west end or west approach (39% of the respondents). Thirty-three percent (33%) said they use Mt. Hood, 29% use the west slope, 19% use the east slope and 13% use the north end (north approach). Twenty-six percent (26%) indicated they use all the Planning Unit and only 1% said they don't use any of the area.



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SPECIAL REPORTS

PREPARED FOR

THE MT. HOOD PLANNING UNIT

- Collins, Melvin D. "Fish Resources and Management of the Sandy and Hood River Systems Within the Mt. Hood Planning Unit" Fish Commission of Oregon - Division of Management and Research. August 1974.
- "Estimates and Projections Visitor Use Days, By Activity, Mt. Hood National Forest 1970 and 1990" Columbia Region Association of Governments, Staff Working Paper. 1974.
- "General Work Plan - Hood Input Interagency Planning Team - Mt. Hood Planning Unit. June 24, 1973.
- Lisner, F.G. and H.R. Sweet. "Mt. Hood Study Groundwater", Oregon State Engineer, Groundwater Division. 1974.
- "Mt. Hood Planning Unit - Its Wildlife" U.S. Forest Service. Staff Working Paper. 1975.
- "Population Projections, Housing Needs and Capacity in the Mt. Hood Planning Unit" Columbia Region Association of Governments. Staff Working Paper. June 11, 1975.
- "Public Input Analysis - Mt. Hood Planning Unit Futures" U.S. Forest Service. 1975.
- "Public Input Analysis - Mt. Hood Planning Unit Objectives" U.S. Forest Service. 1974.

Mapping and Special Reports

1. Geologic Mapping - USFS
2. Soils Mapping - SCS and USFS
3. Vegetative Mapping - USFS and PNW Forest & Range Experimental Station
4. Recreation Features - Interagency Team
5. Airshed and Thermal Area - Interagency Team
6. Fire History - Interagency Team
7. Land Ownership - Interagency Team
8. USFS Stream Classifications - USFS
9. Composite Land Suitability Map - Interagency Team
10. Specific Suitability Maps:
 - a. Water Quality
 - b. Water Quantity
 - c. Fire Hazard
 - d. Visual - Scenic Quality
 - e. Development (Residential and Commercial)
 - f. Wildlife - Winter Range and Ecotones
 - g. Recreation Opportunities - Developed and Dispersed
 - h. Snow Activities - Downhill Skiing, Snowmobile, Snowplay, Mountaineering

EXHIBIT I

AD HOC TECHNICAL REVIEWS
OF PROPOSED PROJECTS
IN THE MT. HOOD PLANNING UNIT

<u>NAME</u>	<u>DATE</u>	<u>INITATING AGENCY</u>
Warm Springs Interchange	May 1973	State Department of Transportation
Winterwood Condominium Development (Government Camp)	June 1973	Clackamas County
Government Camp Sewage Treatment Plant Improvement and Expansion	July 1973	Department of Environmental Quality
Texas Chairlift - Mt. Hood Meadows	July 1973	USFS
Cedar Ridge Planned Unit Development - Brightwood	November 1973	Clackamas County
Mt. View Ridge Development (Lolo Pass)	February 1974	Clackamas County
Rim on Hood River Planned Unit Development	July 1974	Hood River County
Mt. Hood Loop Water District	November 1974	Metropolitan Boundary Commission
Timberline Lodge - 30 Year Plan	October 1974	USFS
Bowman - Sherfy Commercial Development	March 1975	Clackamas County
Carl Bright Conditional Use Golf Course - Salmon River View Estates	July 1975	Clackamas County
Proposed Zoning: Firwood - Cherryville	October 1975	Clackamas County

EXHIBIT J

MAJOR

CAPACITY ELEMENTS

ABSTRACTS

1. Highway System
2. Available Land
3. Available Water
4. Water Quality
5. Wildlife Diversity
6. Scenic Quality
7. Public Recreation
8. Regional Allocation & Perspective
9. Air Quality
10. Energy Consumption
11. Public Services
12. Public Attitudes & Opinions

INTRODUCTION

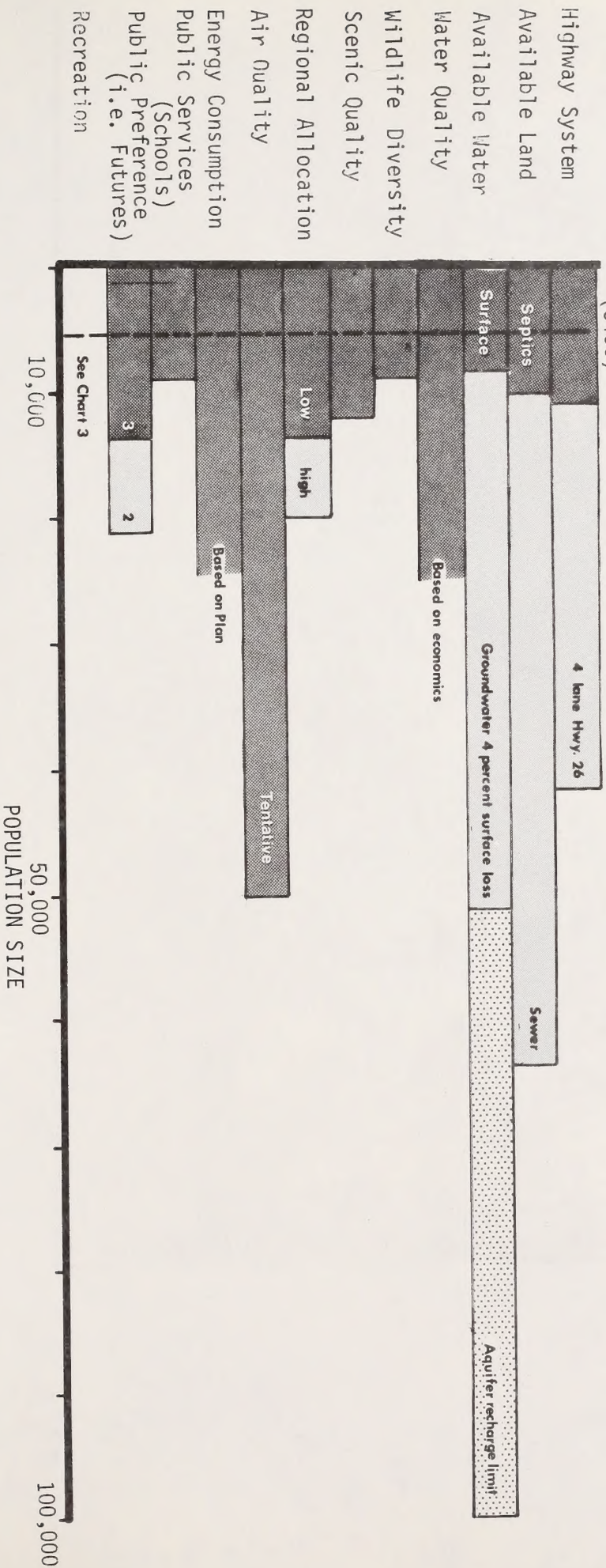
This material is the product of a special committee assignment initiated by Hood/Input. The assignment was to use data and information gained from previous studies, conduct original research where necessary, and estimate the capacity of a dozen isolated constraint factors as they relate to Mt. Hood and its ability to support increasing use and population. The purpose of this report is to present committee findings in a form usable as a resource and planning guide. No conclusions are drawn with regard to an "optimum" or recommended level of population, or its distribution within the planning unit. This is expected to emerge from the interaction of government critique, citizen feedback, and interagency decision-making as the process of Environmental Assessment unwinds toward an adopted, overall Mt. Hood Plan.

With each abstract presented here, there is a brief explanation of the scope, method, sources, terms, and controlling assumptions. Primary findings and estimates are also presented. For more depth and interpretation, interested parties should contact the planning team.

ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

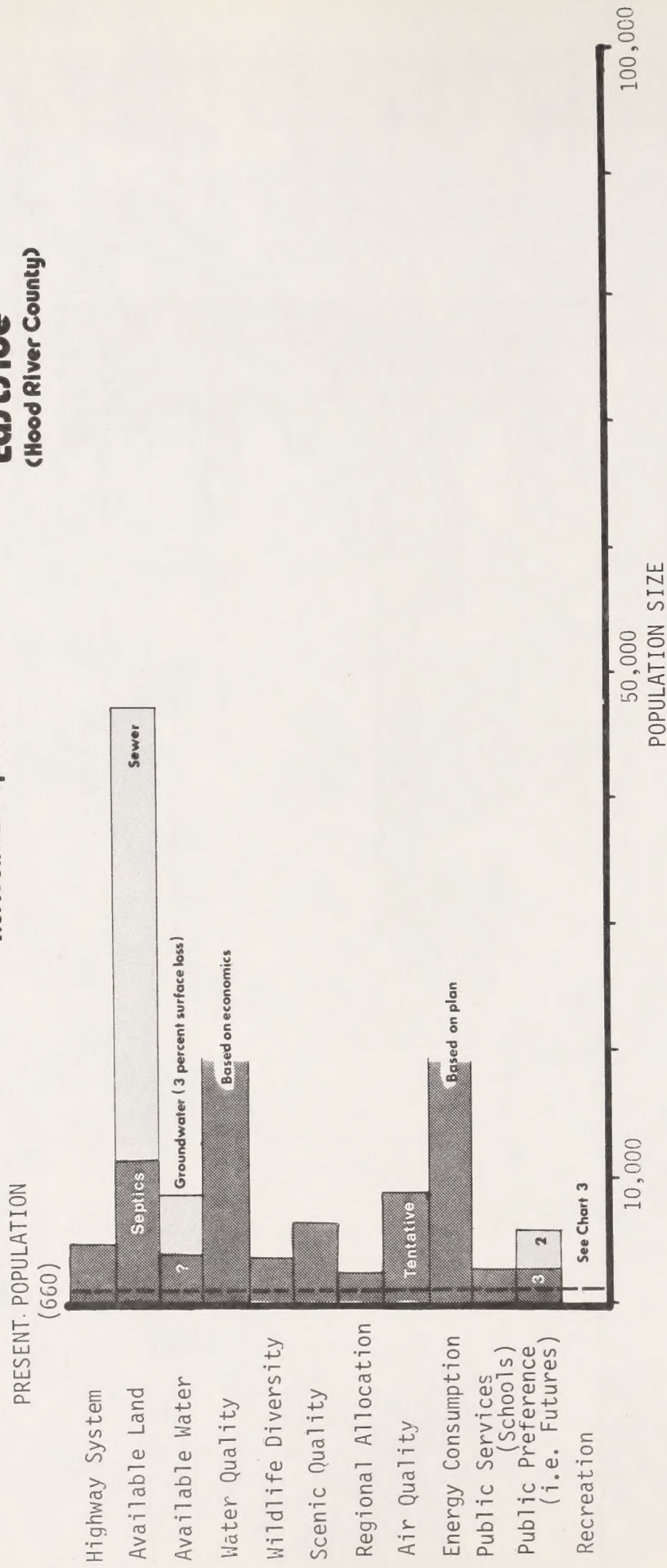
Westside
(Clackamas County)

PRESENT POPULATION
(6400)



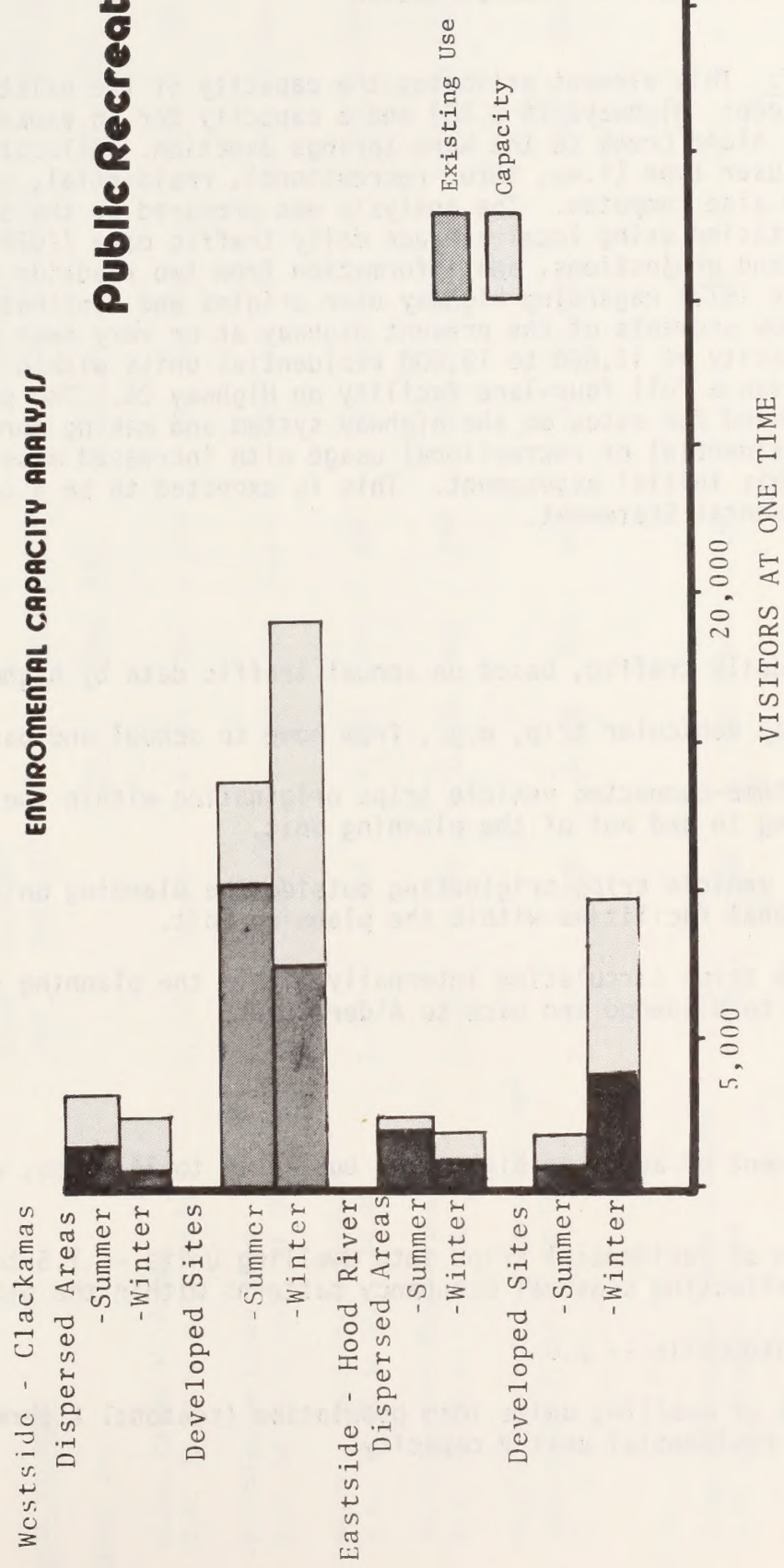
ENVIRONMENTAL CAPACITY ANALYSIS Residential Population

Eastside
(Hood River County)



Public Recreation

ENVIRONMENTAL CAPACITY ANALYSIS



MT. HOOD PLANNING UNIT

ELEMENT: Highway System

AGENCY: State Department of Transportation

ABSTRACT/SUMMARY: This element estimates the capacity of the existing highway system (Mt. Hood Loop: Highways 26 & 35) and a capacity for an expanded four-lane Highway 26, Alder Creek to the Warm Springs Junction. Allocations of capacity by highway user type (i.e., thru, recreational, residential, and local traffic trips) were also computed. The analysis was prepared by the State Department of Transportation using local average daily traffic data (1974), state-wide traffic demand projections, and information from two roadside interviews (mid-week, summer 1972) regarding highway user origins and destinations. Major findings show segments of the present highway at or very near capacity and a maximum capacity of 12,000 to 13,000 residential units within the west side corridor given a full four-lane facility on Highway 26. The potential for reducing demand for autos on the highway system and making more capacity available for residential or recreational usage with increased mass transit was not a part of this initial assessment. This is expected to be a consideration of the Environmental Statement.

TERMS DEFINED:

"ADT" - average daily traffic, based on annual traffic data by highway segment.

"Trip" - a two-way vehicular trip, e.g., from home to school and back.

"Residential" - home-connected vehicle trips originating within the planning unit, but traveling in and out of the planning unit.

"Recreational" - vehicle trips originating outside the planning unit, but attracted by recreational facilities within the planning unit.

"Local" - vehicle trips circulating internally within the planning unit, i.e., from Alder Creek to Wildwood and back to Alder Creek.

CONTROL FACTORS:

- Displacement of autos on highway by bus -- 12 to 14 autos, with full bus ridership.

- Conversion of residential trips into dwelling units -- 1.5 to 1.7 trips per unit, reflecting seasonal occupancy patterns within the planning unit.

- Persons/automobile -- 2.8

- Conversion of dwelling units into population (seasonal & permanent) -- 3.3 persons per residential unit @ capacity.

FINDINGS/GENERAL ESTIMATES: The following table shows capacity estimates in auto trips for the segments of Highway 26 & 35 within the Mt. Hood Planning Unit:

MT. HOOD HIGHWAY SYSTEM

HIGHWAY SEGMENT	1974 ADT	PRESENT CAPACITY	TRIP TYPES			EXPANDED FOUR- LANE CAPACITY			PROJECTED ALLOCATION AND TRIP TYPES		
			Thru	Rec	Res	Local	Thru	Rec	Res	Local	
Highway 26)											
Alder Creek-Wildwood M.P. 33.23 to M.P. 38.96	5,600	26,200	2,100	960	2,340	200	26,000	3,700	1,900	20,250	350
Wildwood-Welches Road M.P. 38.96 to M.P. 41.20	5,400	6,500 *	2,100	960	2,140	200	26,700	3,700	1,900	20,750	35
Welches Road-Rhododendron M.P. 41.20 to M.P. 44.08	3,700	7,800	2,100	800	600	200	22,200	3,700	1,600	16,500	35
Rhododendron-Timberline Highway M.P. 44.08 to M.P. 54.22	3,100	6,300	2,100	650	250	100	20,300	3,700	1,300	15,600	20
Timberline Highway-Warm Springs Highway-M.P. 54.22 to M.P. 57.45	2,700	5,800	2,100	250	300	50	20,800	3,700	500	16,400	10
Highway 35)											
Warm Springs-Mt. Hood Meadows M.P. 57.45-M.P. 63.95	500	3,000	200	100	150	50	- -	- -	- -	- -	- -
Mt. Hood Meadows-Mt. Hood P.O. M.P. 63.95-M.P. 85.0	550	3,400	200	150	150	50	- -	- -	- -	- -	- -

*NOTE: Most restrictive segment in relation to existing ADT level governs existing reisident capacity @ 1.5-1.7 trips per housing unit and 3.3 persons per unit (seasonal or permanent).

MT. HOOD PLANNING UNIT

ELEMENT: Available Land

AGENCY: Clackamas & Hood River Counties

ABSTRACT/SUMMARY: The available land component identifies the amount of acreage within the planning unit suitable for developed sites and for varying levels of development feasibility. The aim of this assessment was to separate out the prime developable land, that is, land which can be developed at least environmental cost and yet be considered realistically "available". A map screening technique was used to outline (1) unsuitable development areas or lands with major constraints of natural suitability (e.g., floodplains, excessive slopes) and restricted use (e.g., Mt. Hood Wilderness, domestic watersheds) and (2) suitable areas for developed sites according to five levels of feasibility for development based on road access, utility link-up, building siting, and sewage disposal potential. A breakdown was made according to public or private lands. Criteria for suitability and feasibility constraints were compiled from existing land use policy (e.g., State of Oregon subsurface disposal requirements) and practical understanding of area conditions. The analysis was prepared by the Clackamas and Hood River planning staffs, with assistance from the Clackamas County Public Works (soils capability) and U. S. Forest Service (planimeter acreage measurements). The estimates for available land were then used to measure private land capacities in terms of residential development, either on septic tanks or sanitary sewers. For the private lands most readily available and suitable for development, gross capacity yields were as follows:

	Housing Units	
	<u>On Septics</u>	<u>On Sewers</u>
Clackamas County	2,700-3,400	22,000
Hood River County	3,150	14,400

The total prime developable land, whether public or private, was estimated to be 15,200 acres. Of this, approximately 7,200 acres were privately-owned and under Hood River and Clackamas County jurisdiction. Alternative uses for these lands, such as agricultural or timber production, were not a part of this analysis.

SOURCES:

Mapping - Composite Suitability, Geology, Land Ownership, Existing Land Use, Subdivided and Leased Lands (Mt. Hood Interagency Inventory File - 1974).

Planning Policy - "Preliminary Plan - Mt. Hood Community" (Clackamas County), "Clackamas County Comprehensive Plan", "Hood River County Comprehensive Plan", Federal Multiple Use Plans.

TERMS DEFINED:

Highest Development Feasibility

- 1 - Includes areas of low to moderate slopes, well-drained soils, suitability for building sites and subsurface disposal systems, reasonable access and utility (water, sewer) link-up potential.
- 2 - Includes areas of reasonable access and utility link-up potential, suitability for building sites, but soils are more rapidly drained and somewhat limited for subsurface disposal.

Moderate Development Feasibility

- 3 - Includes areas with reasonable access and utility link-up potential, but low suitability for building sites and subsurface disposal due to drainage or slope conditions.
- 4 - Includes areas with suitability for building sites and subsurface disposal, but restricted access and utility link-up potential.

Lowest Development Feasibility

- 5 - Includes areas with low suitability for building sites/subsurface disposal and restricted access/utility link-up potential.

Unsuitable/Restricted

- Includes areas above 6000' elevation (timberline), 100 year floodplains, wetlands and marshes, surface water features, 25% slopes or greater, geologic hazard areas, major power easements, domestic watersheds, and classified wilderness.

CONTROL FACTORS:

- Capacity for residential development predominantly on septic systems calculated @ $\frac{1}{2}$ to 2 acres per unit, feasibility rating of 1; @ 1 to 5 acres per unit, feasibility rating of 2. Areas with feasibility ratings 3 through 5 were not considered.
- Capacity for residential development predominantly on sanitary sewers calculated @ 4 units per acre, feasibility rating of 1 or 2; @ 2 units per acre, feasibility rating of 3. Areas with feasibility ratings 4 & 5 were not considered.
- Capacity of individual housing units (seasonal and/or permanent) calculated @ 3.3 persons per unit.

FINDINGS/GENERAL ESTIMATES: The following tables show the amount of land within the planning unit in terms of suitability and feasibility for residential development in acres. Private land capacity estimates shown in the summary were derived using the preceding control factors.*

TOTAL PLANNING UNIT

DEVELOPMENT FEASIBILITY RATING	ACRES				TOTALS
	WEST APPROACH	WEST SLOPE	EAST SLOPE	NORTH APPROACH	
A. Highest	3,353	4,735	2,809	4,287	15,184
B. Moderate	7,949	7,715	6,785	1,993	24,442
C. Lowest	4,774	4,587	1,829	- - -	11,190
TOTALS	16,076	17,037	11,423	6,280	50,816
D. Unsuitable/Restricted	15,508	46,321	19,193	4,127	85,149
E. Wilderness &/or above 6,000 foot elevation	- -	5,131	15,201	- - -	20,332
PLANNING UNIT TOTALS	31,584	63,358	45,817	10,407	156,297

PRIVATE LAND PORTION

DEVELOPMENT FEASIBILITY RATING	ACRES				TOTALS
	WEST APPROACH	WEST SLOPE	EAST SLOPE	NORTH APPROACH	
A. Highest	2,309	295	320	2,716	5,640
1.	804	100	- -	701	1,605
B. Moderate	4,178	- -	- -	1,923	6,101
3.	1,516	70	- -	- -	1,586
4.	2,779	- - -	- - -	- - -	2,779
C. Lowest	11,586	465	320	5,340	17,711
5.	7,939	705	- - -	2,185	10,829
TOTALS	19,525	1,170	320	7,525	28,540
Unsuitable/Restricted					
TOTAL PRIVATE					

ELEMENT: Available Water

AGENCY: State Wildlife Commission and Engineers Office

ABSTRACT/SUMMARY: The available water analysis examines the limits of domestic water supply in relation to maintenance of favorable stream conditions for fishlife and recreation use, current allocation of flows to outstanding water rights, and the effect of groundwater withdrawals on surface supply. Groundwater and surface supplies were examined separately, with data provided by the State Engineers Office and Oregon State Wildlife Commission. Major surface supply limitations include prior allocations for power purposes on both the Sandy (PGE) and East Fork Hood River (PP&L) drainages. In addition, deficits of flow during dry season months exist for productive fish habitat. Groundwater supplies are controlled by extent and yield capabilities of existing aquifers within the planning unit and their recharge ability. Although the analysis suggests that increased surface water capacity (perhaps through upstream reservoir facilities) is needed to support much additional growth, available groundwater is not nearly as restrictive. It was estimated the aquifer recharge ability of the westside corridor could support a population of 100,000. A more acceptable balance, however, resulting in less than a four (4) percent reduction of surface flows, would be approximately 60,000 persons. A population of 8,000 could be supported in upper Hood River valley, with a three (3) percent surface loss and no change from current irrigation needs. If irrigation requirements are increased (which appears likely), Hood River County's population capacity in terms of groundwater would be reduced.

SOURCES:

- State Engineer's Office
- State Water Resources Board
- State Wildlife Commission
- State Department of Environmental Quality Draft Management Plans for the Sandy and Hood River Drainages.

SURFACE WATER*

	AVERAGE MINIMUM MONTHLY FLOW	LOW FLOWS		RECOMMENDED FOR FISH & RECREATION		EXISTING NON-CONSUMPTIVE POWER ALLOCATIONS		TOTAL EXISTING CONSUMPTIVE ALLOCATIONS
		7-Day In 10 Years	7-Day In 2 Years	Optimum	Minimum	PGE	PP&L	
God River (East Fork)	155	?	?	150-250	100-150	- -	500	227 ³
ackamas (Sandy)	391 ¹ /428 ²	150	200	230-460	200-300	800	- -	24 ⁴

In CFS (cubic feet/second)

State Water Resources Department

U. S. Geological Survey

Ninty-six (96) percent for irrigation, the balance for domestic, industrial and municipal purposes.

A complete survey on the Sandy River above Marmot has not been done to date. A major tributary, the Salmon, has 11.257 cfs appropriated to consumptive water rights.

6.4 -

ie: Low flow data, where available, suggest substantial conflict with both recommended and prior-allocated flows.

ELEMENT: Water Quality

AGENCY: State Department of Environmental Quality, Mt. Hood Planning Team

ABSTRACT/SUMMARY: The aim of the water quality element is to consider the limits to growth and development as imposed by pollution control regulations and present water quality standards. The essential policy with respect to existing water quality within the planning unit is one of non-degradation or zero pollution. This means assimilative capacity concepts based on stream dilution ratios are no longer applicable; and additional development on sewers will be expensive. Both point (e.g., sewage works) and non-point (agriculture, timber harvesting) sources of pollution must be considered. The State Department of Environmental Quality is responsible for water quality management with the Sandy and Hood River drainage basins and adopting programs to prevent their degradation. In addition to State water quality management policies, a sewage collection feasibility study (with cost analysis) by Stevens, Thompson & Runyan, Inc., and a linear computer program output (testing effects of different land use patterns upon water quality objectives) will supplement the Environmental Statement. Capacity limits in terms of water quality, particularly from an economic/cost standpoint, should then be more definitive.

SOURCES:

- State Department of Environmental Quality, Management Plans for Sandy and Hood River Drainages, 1972 and 1974 respectively.
- Clackamas County Alder Creek-Rhododendron Sanitary Sewage Service Study, 1975-76.

MT. HOOD PLANNING UNIT

ELEMENT: Wildlife Diversity

AGENCY: U.S. Forest Service and Clackamas/Hood River Counties

ABSTRACT/SUMMARY: The single, outstanding biological feature about Mt. Hood and vicinity is the high species diversity or variety among its plant and animal communities. This element reviews the amount of development that could occur while substantially preserving the high level of wildlife and habitat diversity. Measurements of habitat change resulting from encroachment of development were compared to habitat types and sensitivity, based on factors of winter range, fisheries, wetland occurrence, unusual species and vegetative recovery. Threshold margins were estimated and translated into the amount of allowable development, assuming a density greater than five (5) dwellings per square mile (the level at which development impact in terms of wildlife harassment becomes apparent). The analysis was prepared by the Forest Service's Wildlife Biologist, with relevant land use information provided by Clackamas and Hood River County. Major findings show an average habitat alteration of 11.3 per cent as a result of development (private communities, low density residential, public campgrounds, roads, etc.) and a total of 5.3 square miles of additional allowable development within the planning unit. The public lands, where habitat sensitivity is generally higher and overall development impact is lower, received 1.2 square miles for additional roads or recreational development. Additional development to be allowed in private portions was estimated at 1.65 square miles in Clackamas County and 2.43 square miles in Hood River County. Urban-level densities (greater than 1,000 to 2,000 people per square mile) were considered too extreme if habitat values and native wildlife, as known today, are to be maintained. To reduce the rate of decline in wildlife values, additional development should concentrate in areas already appreciably impacted (e.g., Welches), minimizing encroachment into undisturbed and sparsely built-up areas. More work is necessary on capacity estimates for timber harvest and agriculture in relation to wildlife retention within the Planning Unit.

SOURCES:

1. Balda, R. 1975. Vegetation Structure and Breeding Bird Diversity. Proceedings of the Symposium in Range Habitats for Non-Game Birds. USDA-Forest Service. General Technical Report WO-1; 59-80.
2. MacArthur, R., et al. 1966. On the Relation Between Habitat Selection and Species Diversity. The American Naturalist. 100(913); 319-331.
3. See also: Mt. Hood National Forest Wildlife Biology files for extensive reference bibliography.
4. Mapping: Land Use, Ectones & Winter Range (Mt. Hood Interagency file).

TERMS: Free ranging dogs: To effectively maintain any semblance of the present wildlife density, free ranging domestic dogs must be controlled in the existing winter range area (see wildlife suitability map) where densities presently exceed greater than five (5) free ranging dogs per visit - summer and winter. Dogs must also be controlled on the many miles of recreational hiking trails within the planning unit.

FINDINGS/GENERAL ESTIMATES: The following table shows the amount of additional residential development on private lands at densities considered reasonable and yet sufficiently low to protect the existing high wildlife diversity. In addition, total alteration of wildlife diversity (compared to a "wild" or pre-development character) and average habitat sensitivity levels are shown for all lands within the planning unit.

DESCRIPTION	ACRES EXAMINED	AVERAGE % ALTERATION	AVERAGE HABITAT SENSITIVITY INDEX	ALLOWABLE SQ.MILES OF ADDITIONAL RES.DEV.	RESIDENT POPULATION CONVERSION (PREFERRED)	RESIDENT POPULATION CONVERSION (MAXIMUM)**
West Approach	8,700	15.8	7.5	1.20	480-1200	2400
West Slope*	10,000	9.1	10.5	.45	180-450	900
East Slope	4,700	7.1	11.6	.76	300-760	1520
North Approach	7,100	20.4	10.6	1.67	680-1700	3400
Total Planning Unit	30,500	11.3	10.1	4.08	1640-4110	8220

* Includes Fabion, Rhododendron, Leased Summer Homes Area, and Government Camp.

** While this outer limit means even further decline in species number, impact on diversity may be absorbed, provided: (1) new development is concentrated in areas already severely altered; (2) wetlands, winter range, river fisheries, important ecotonal areas, and key wildlife corridors remain undisturbed and are buffered from development; (3) the existing free-ranging dog populations are reduced and controlled; and (4) seasonal residential occupancy patterns remain constant. Since the likelihood of totally achieving these conditions appears too idealistic -- i.e., requiring stronger and more unpopular regulation than is now in effect -- the most comfortable estimate of carrying capacity in terms of wildlife diversity is best represented by the lower-level growth range.

MT. HOOD PLANNING UNIT

ELEMENT: Scenic Quality

AGENCY: U. S. Forest Service & Clackamas County Planning Department

ABSTRACT/SUMMARY: The scenic quality element examines the question of the amount of residential development supportable within the planning unit without excessively degrading the visual quality and character of the Mt. Hood Area. An inherent premise is that the scenic landscape is a basic resource and natural features (as opposed to most manmade features) are the best measure of scenic beauty. Utilizing land suitability data, known density and land use characteristics, and the visual quality analysis for the Mt. Hood Planning Unit, scenic quality limits were identified and arrayed by geographic area. These limits were subsequently converted to the amount of permissible development. The analysis was prepared by the Landscape Architecture staff of the U. S. Forest Service, with assistance from the Clackamas County planning staff. Results of the study show the planning unit is capable of supporting approximately 5000 total dwelling units without significantly affecting natural scenic qualities. The analysis assumes future development would be of a quality design and site development would be sensitive to natural features. Restoration of areas already adversely affected from a visual standpoint would help to raise the present scenic limits; conversely, poorly-designed development projects or the introduction of other adverse visual impacts, such as gravel pits, logging scars, etc., would tend to lower the overall scenic capacity.

SOURCES:

Existing Density Data - Clackamas County

Typical Land Coverage and Land Use Characteristics - The Community Builders Handbook, Community Builders Council of the Urban Land Institute, Wash., D.C., 1968, and Land Use Intensity Data Sheet 19, Land Planning Bulletin No. 3, HUD, Federal Housing Administration.

Concepts of Landscape Management - National Forest Landscape Management, Vol. 1, USDA Handbook No. 434, & Vol. 2, USDA Handbook No. 462.

Landscape Visual Factors - USFS, The Visual Analysis System, R-1, Missoula.

TERMS DEFINED:

Natural Visual Variety

1. Class A Lands -- distinctive areas where features of landform, vegetative patterns, water forms and rock formations are of unusual or outstanding visual quality. They are usually not common to the landscape.

2. Class B Lands -- areas where features contain variety in form, line, color, and texture or combinations thereof but which tend to be common throughout the landscape and are not outstanding in visual quality.
3. Class C Lands -- areas whose features have minimal change in form, line, color, or texture. Includes all areas not found under classes A and B.

Natural Features Index -- total point score attributed to natural features within a given landscape segment divided by the number of acres.

Net Features Index -- total natural features score minus total score attributed to manmade features within a given landscape segment and divided by the number of acres.

Reserve Margin Index -- difference between net index and permissible scenic reduction per segment, as measured from the natural index score. Converts to a point score, which in turn, yields acres of development at a given density.

CONTROL FACTORS:

- Permissible Scenic Quality Reduction per Landscape Segment.

Variety class A - 10%

Variety class B - 20%

Variety class C - 30%

- Conversion of Score Reduction Reserve to Acres of Development.

Design PUD Model of 50 acres @ 2 units/acre =	road cuts/fills	70
	land coverage	100
	commercial/utility	6
	general	50
	TOTAL SCORE	226

FINDINGS/GENERAL ESTIMATES: The following table displays the total amount of residential PUD development in acres or equivalent scenic impact permissible without lowering overall scenic quality. While the total number of allowable units at maximum development remains constant, on-site density factors may vary.

<u>AREA</u>	<u>EXISTING AV. SCENIC REDUCTION</u>	<u>RESERVE MARGIN INDEX</u>	<u>POTENTIAL ACRES OF HOUSING ALLOWABLE @ VARIABLE DENSITIES (UNITS/AC.)</u>			
			<u>4/AC</u>	<u>2/AC</u>	<u>1/AC</u>	<u>0.5/AC</u>
West Approach	23%	0.43	645	1,289	2,578	5,156
West Slope	18%	0.27	157	314	628	1,256
East Slope	3%	0.17	314	628	1,256	2,512
North Approach	14%	0.19	145	291	582	1,164
TOTAL PLANNING UNIT	18%	0.26	1,261	2,522	5,044	10,088

MT. HOOD PLANNING UNIT

ELEMENT: Public Recreation

AGENCY: U. S. Forest Service, Zigzag & Parkdale Ranger Districts

ABSTRACT/SUMMARY: The recreation element of the environmental capacity analysis deals with the problem of estimating how many recreation visitors can be accommodated within the areas and facilities presently in use and without degrading the environment or quality of experience. The analysis was done by Forest Service recreation staff and people knowledgeable of present use or activity levels and the kinds of environmental/facility stresses currently being experienced. Some areas of the planning unit, such as parts of the Zigzag mountain roadless area and Paradise Park section of the Pacific Crest Trail, are already overloaded while others have room to absorb additional recreation use.

TERMS DEFINED:

"Present Use" - the highest visitation figure in numbers of people (Persons @ one time) experienced during the past two years.

"Present Capacity" - the number of people that can be accommodated by existing developed facilities or within present dispersed recreation areas without damaging the resources and facilities.

"Summer" - a 30 day period in June/July/August of highest or peak use.

"Winter" - a 30 day period in December/January/February of highest or peak use.

"Developed Recreation" - areas with developed facilities in place, designed to accommodate larger volumes of users, including picnic sites, campgrounds, parking and ski lift facilities, day lodge, etc. For ski areas, day-time figures only are shown.

"Dispersed Recreation" - areas with or without a road access system, but having no significant developed facilities other than, for example, a trailhead. Capacity estimates for these areas are based on the number of available campsites associated with the existing trail system.

CONTROL FACTORS:

Camping or picnic site maximum design -- 5 persons per unit.

Actual use of camping or picnic site based on available parking -- one space per unit @ 3.2 persons per automobile.

One bus -- 5 auto parking spaces or 40 persons.

FINDINGS/GENERAL ESTIMATES: The following table shows the capacity estimates in numbers of people for public recreation areas and facilities currently in use within the Mt. Hood Planning Unit:

Dispersed Areas

	Present Use		Present Capacity	
	<u>Summer</u>	<u>Winter</u>	<u>Summer</u>	<u>Winter</u>
Hood River	1,955	890	2,445	1,490
Clackamas	1,218	715	2,545	1,650
SUBTOTAL	3,173	1,607	4,990	3,140

Developed Sites

	Present Use		Present Capacity	
	<u>Summer</u>	<u>Winter</u>	<u>Summer</u>	<u>Winter</u>
Hood River	1,330	9,410	1,358	9,778
Clackamas	10,397	7,570	15,627	18,582
SUBTOTAL	11,727	16,980	16,985	28,360

PLANNING UNIT

TOTALS	14,900	18,587	24,520	31,500
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NOTE: Use figures are for persons at one time (PAOT).

ELEMENT: Regional Allocation & Perspective

AGENCY: Columbia Region Association of Governments (CRAG)

ABSTRACT/SUMMARY: This element examines the question of residential growth in the planning unit in relation to regional population prospects and land needs. It describes the possible housing and population levels that may be reached by year 2000, based largely on two reliable evaluations of regional growth prospects as they would affect the Mt. Hood area. These evaluations, developed separately by CRAG and the Center for Population Research and Census (CPRC) at Portland State University, helped to establish regional control references for specific projections at the local planning unit level. The analysis was prepared by the CRAG staff in cooperation with Clackamas and Hood River County planning staffs, using the regional projections, 1970 county-wide and area-related census data, and 1974-75 estimates of population and housing stock within the planning unit. While not definitive measurements of carrying capacity, recent population projections based on regional market factors and preliminary efforts to identify broad land use needs from a region-wide perspective serve as reasonable parameters for discussion of Mt. Hood's carrying capacity. Primary findings suggest a total resident population (seasonal and year-round) for the planning unit of about 13,600 if CRAG projections prove accurate and a total resident population of 20,500 if CPRC projections prove accurate. Clackamas County's share of the higher projection level could be absorbed within 1.5 to 3.0 square miles of designated urban land (in addition to Government Camp) and maintain an overall rural character.

REFERENCES:

CRAG - Columbia Region Association of Governments, Illustrative Projections, Staff Working Paper #2, 1973.

CPRC - Center for Population Research & Census, PSU, Population Projections, Oregon Administrative District No. 2, March, 1975.

1970 Census of Population & Housing, U. S. Department of Commerce.

CONTROL FACTORS:

- Permanent Population/Housing Unit Ratio:

Mt. Hood CCD (CT243) = 1.67 in 1970 (U.S. Census)
Hood River Co. ED 23, 24, 25, 26, = 1.50 in 1970 (U. S. Census)
Mt. Hood Planning Unit - Clackamas County Portion = 1.06 in 1975*
Mt. Hood Planning Unit - Hood River Portion = 1.50 in 1975*

- Percent of Housing Stock Occupied Year-Round:

Mt. Hood CCD (CT243) = 61% in 1970 (U.S. Census)
Hood River Co. ED 23,24,25,26 = 53% in 1970 (U. S. Census)
Mt. Hood Planning Unit - Clackamas Portion = 53% in 1975*
Mt. Hood Planning Unit - Hood River Portion = 43% in 1975*

* Interagency Estimates

FINDINGS/GENERAL ESTIMATES: The following table shows housing and population capacities for the Mt. Hood Planning Unit in relation to projected regional market and population conditions:

	TOTAL HOUSING NEEDS & CAPACITIES ^a			TOTAL POPULATION ^a	
	EXISTING HOUSING _b 1975	PROJECTED HOUSING ^c 1980 2000	ESTIMATED HOUSING CAPACITY ^d	EXISTING 1975	PROJECTED ^c 1980 2000
1. Clackamas County Portion					
CPRC	2440	3775 7406	6383-high 5620-Med. 5365-low	6400	9845 19,3
CRAG	2440	2877 4772		6400	7503 12,4
2. Hood River County Portion					
	280	320 504	-----	660	754 1,18

CPRC - Center for Population Research and Census, Portland State University

CRAG - Columbia Region Association of Governments

a) Seasonal & year-round combined.

b) Based on Mt. Hood Interagency Team estimates made in 1974.

c) Based on fair proportion of regional projections developed by CRAG & CPRC.

d) Based on CRAG's "focused growth" regional sketch planning and land area measurements.

"high" - overall density averages 2 acres per unit.
 "med." - overall density averages 5 acres per unit.
 "low" - overall density averages 10 acres per unit.

NOTE: The above densities apply to Rural Classified areas.

MT. HOOD PLANNING UNIT

ELEMENT: Air Quality

AGENCY: Mt. Hood Planning Team and State Department of Environmental Quality

ABSTRACT/SUMMARY: The original intent of the air quality element was to deal with the capacity of the planning unit to carry emissions without producing conditions which exceed present air quality standards. It is impossible at this point, however, to estimate how much actual air pollution is occurring as a result of interaction between current emission levels, weather and topography. This would require a comprehensive air flow modeling process, a task too complex and time-consuming for the present interagency schedule. In absence of such a baseline, emissions generated by major sources of pollution within the planning unit were calculated for different levels of use, including estimates for the present activity level. Based on advice from State air quality specialists, it is quite certain other factors will prove more limiting than air quality. The complex of wind patterns, terrain, etc., create a situation in the planning unit where a fairly large increase in emissions can be absorbed without significantly degrading ambient air quality. The planning team will recommend a more sophisticated analysis be undertaken by the State Department of Environmental Quality (DEQ) in the Mt. Hood area, treating it as a Level 1 Region where a very low level of emissions would be allowed (i.e., maintain pristine standards).

SOURCES:

State Department of Environmental Quality
State Department of Transportation
Federal Environmental Protection Agency
Zigzag & Parkdale Ranger Districts.

CONTROL FACTORS:

- Auto Emissions (1975 grams/vehicle mile)

Particulate	SO _x	NO _x	CO	HC
.58	.20	5.0	50	6.5

- Slash Emissions

1. Clearcut @ 70 tons/acre; partial cut @ 15 tons/acre.

2. Particulate	NO _x	CO
9 lbs/ton	2 lbs/ton	65 lbs/ton

CONTROL FACTORS (CON'T):

- Furnace Emissions

1. Fuel usage per capita

	1973 Mixture	New Construction Mixture
Oil	0.146×10^3 gal/person/yr.	0.0316×10^3 gal/person/year
Gas	0.0117×10^6 ft ³ /person/year	0.027×10^6 ft ³ /person/year

2. Emission Factors:

	Particulate	SO _x	NO _x	CO	HC
Gas (lbs/10 ⁶ ft ³)	19	0.6	80	20	8
Oil (lbs/10 ³ gal)	10	30.0	12	5	3

3. Fireplaces - 0.26 lbs of particulate emission per hour of usage.

FINDINGS/GENERAL ESTIMATES: The following table indicates present emission levels within the planning unit for automobiles, slash burning, and home furnaces. Some projected outputs are also shown.

1. Auto Exhaust Emissions

	Particulate	SO _x	Tons/Year		CO	HC	Total
			NO _x				
Highway 26 & 35 (1974)	22.6	7.8	195.6		1956.1	254.3	2436.4
Projected 4-lane Highway 26 @ capacity	128.8	44.4	1110.4		11103.5	1443.4	13830.4

2. Slash Emissions (1974)

	Particulate	NO _x	Tons/Year		CO	Total
Clearcut	53.5	11.9			380.8	446.3
Partial Cut	25.0	5.6			177.6	208.1
Total	78.5	17.5			558.4	654.4

3. Furnace Emissions

	Particulate	SO _x	Tons/Year		CO	HC	TOTAL
			NO _x				
Existing Housing (2620) @ capacity	6.7	17.8	10.9		3.9	2.1	35.6
Projected Housing (18,200) @ capacity*	17.2	19.7	53.1		14.6	6.4	111.0

*Based on Future #4 (See pages 31-33)

MT. HOOD PLANNING UNIT

ELEMENT: Energy Consumption

AGENCY: Planning Team and State Department of Environmental Quality

ABSTRACT/SUMMARY: This element estimates the amounts of energy consumed by present traffic and housing patterns. Projected fuel consumption based on possible community and highway 26 expansion levels was also examined. The analysis was prepared by the Interagency Planning Team, with advisory assistance from State Department of Environmental Quality (DEQ). Consumption potentials for alternative land use strategies and plans will be shown as a part of the Environmental Statement, but an actual capacity estimate in terms of energy was not possible within the present schedule. A more sophisticated analysis identifying energy flow processes and requirements in relation to regional fuel priorities/prospects is needed, uncertain as that direction may be.

SOURCES:

State Department of Environmental Quality
Portland General Electric
Bonneville Power Administration
State Highway Division

TERMS DEFINED:

BTU - British Thermal Unit, standardized unit of measurement for heat energy.

CONTROL FACTORS:

Heating Oil: 142,000 BTUs/Gal.
Gasoline: 114,000 BTUs/Gal.
314 BTUs/KWH
Average of 1000 KWH/Month/Residence
Auto Consumption: One gallon/13.6 miles.

Housing: 60% heated by gas or oil.
40% heated by electricity.

FINDINGS/GENERAL ESTIMATES: The following table displays the planning unit's fuel consumption in British Thermal Units (BTUs) under present and projected circumstances.

ENERGY CONSUMPTION AND PROJECTIONS

GASOLINE:	THRU	REC	ANNUAL GALLONS		TOTAL GALLONS	TOTAL BTUS
			TRAFFIC TYPES	LOCAL		
- Existing Highway 26 (Alder Creek to Warm Springs Interchange)	1,364,628	465,599	628,728	89,760	2,548,715	290.554x10 ⁹
	2,404,356	926,936	11,300,625	164,966	14,796,883	1686.844x10 ⁹
- Projected four-lane Highway 26 @ capacity						

HEATING FUEL & UTILITIES:	ANNUAL BTUS			TOTAL BTUS
	OIL OR GAS HEAT	ELECTRIC HEAT	ELECTRIC UTILITIES	
- Existing Housing Units (2620)	80.547x10 ⁹	44.994x10 ⁹	34.244x10 ⁹	159.786x10 ⁹
- Projected Housing Units (27,500)* @ Capacity	577.893x10 ⁹	416.934x10 ⁹	330.660x10 ⁹	1325.489x10 ⁹

*Based on current plans & zoning @ saturation (i.e., Future #1)

MT. HOOD PLANNING UNIT

ELEMENT: Public Services

AGENCY: Clackamas and Hood River County

ABSTRACT/SUMMARY: The ability of managing agencies to provide and maintain essential public services at an adequate level of quality is one measure of an area's capacity. This capacity can change over time as capital improvements planning is implemented and services become available in the area. This element should eventually examine the capacity of all major service systems within the planning unit, including the following:

- Schools
- Secondary Road System
- Snow Removal
- Water Delivery
- Sewage Disposal
- Fire Protection
- Police Protection
- Irrigation

One of these -- schools -- is isolated to demonstrate how the public service element may serve as a limiting factor. A more thorough review of present system design capabilities and the ability of local governments to upgrade and expand within financial/taxation constraints is expected as a part of the Environmental Statement.

SOURCES:

Welches and Parkdale Elementary Districts

CONTROL FACTORS:

- 1 elementary student per five houses/westside (excludes summer homes).
- 1 elementary student per two houses/eastside.
- Respective design capacities for Parkdale and Welches elementary schools of 305 students and 450 (with 4 new on-site classrooms) students.

FINDINGS/GENERAL ESTIMATES:

	Present Enrollment	Additional Design Capacity	Conversion To Additional Housing Capacity
Parkdale (I-6)	270	35	70
Welches (K-8)	300	150	750

ELEMENT: Public Attitudes and Opinions

AGENCY: Mt. Hood Interagency Planning Team

ABSTRACT/SUMMARY: Citizens, through government decision makers, interest groups, and as individuals, can affect (1) the importance given to various environmental factors, (2) the amount of revenue generated to provide public facilities, and (3) the political feasibility of any public action, all directly related to an area's carrying capacity. The intent of this element is to correlate respondent preferences on the Mt. Hood Planning Unit Futures to an estimate of the population levels associated with each Future. On the response form, respondents could check which Future they generally most preferred. Figure 1 illustrates the percentage of total respondents preferring each Future and the associated population levels. Because available housing is an important factor in determining population levels, respondent preferences on the housing element of each Future are also shown on Figure 1.

People were also asked on the response form to indicate a preference for each one of the elements of each Future. The following graphs (see Figure 2) indicate respondent preference by element and future in terms of most preferred and least preferred. These graphs are based on information contained in the Public Input Analysis-Mt. Hood Futures.

Figure 2 is provided because it was apparent from the analysis that, although most respondents checked a future they generally most preferred (see Figure 1), there was a "trading off" of preferences for individual elements of the Futures.

Public input is a continuous process for any planning effort; indicators of concerned citizen preference can be quantified and examined from a variety of approaches, including questionnaires, meetings on a formal and informal basis, advisory groups, and day-to-day contact with local citizens. Although the response was just a sampling of people concerned about the mountain area, the views expressed on the 'Futures' publication provides some valuable and current insight.

It should be recalled the purpose of the Futures publication was largely conceptual, that is, primarily concerned with character and the kind of image people would like to see maintained or achieved. An approximation of the population level associated with each future was estimated by measuring the allocations described within the booklet.

SOURCES:

"Public Input Analysis-Mt. Hood Planning Unit Futures", Mary Moore, U. S. Forest Service, 1975.

"Mt. Hood Planning Unit Futures", Mt. Hood Planning Unit, 1975.

Staff working paper - determination of population levels by Future, (Mt. Hood Interagency file - 1975).

TERMS DEFINED:

Respondent - Any individual, organization or agency which provided written comments on the Mt. Hood Planning Unit Futures.

Public Input Analysis - Systematic approach for capturing public comments on the Mt. Hood Futures. Public comment and opinion has been encouraged from everyone indicating any interest and/or concern for the area. Because the planning unit contains resources of National and regional interest, no specific geographic/demographic designations of populations having standing can be determined. Random sampling techniques and representational measurements are, therefore, not possible.

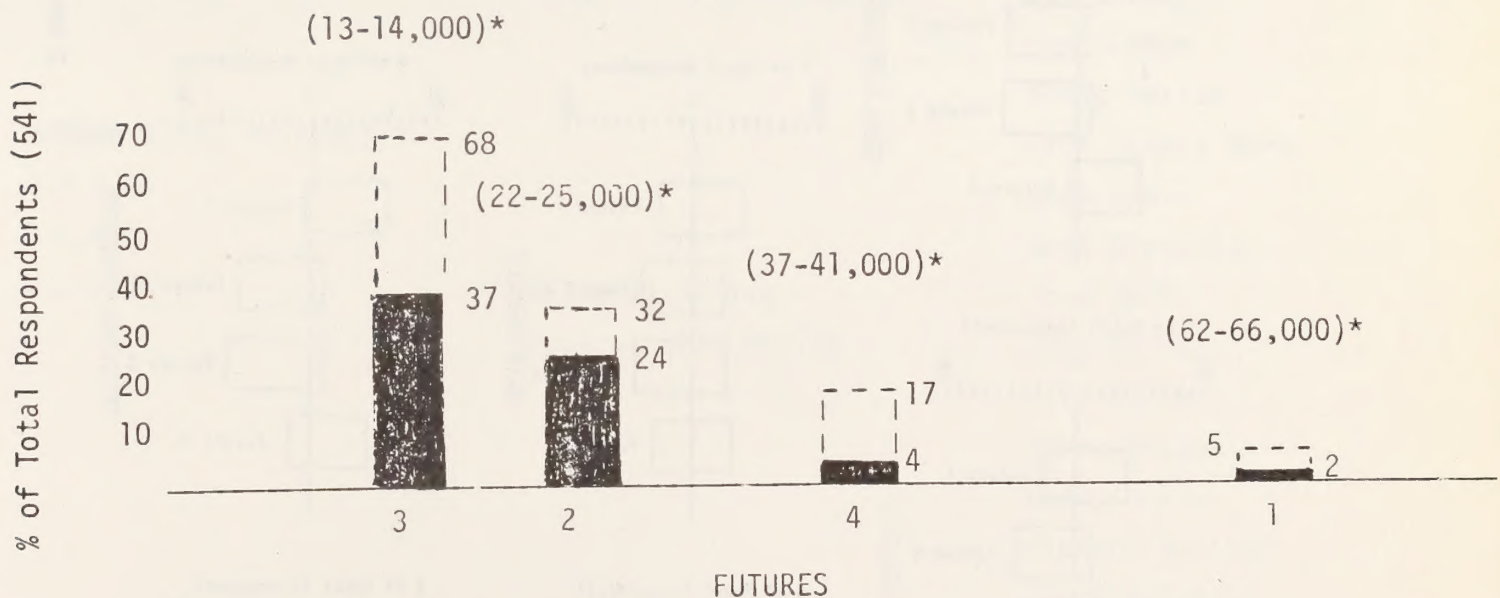
Element - The discussion of each Future was broken down into various factors such as Housing, Agriculture-Forestry, Transportation, etc., which are referred to as elements of the Futures.

Control Factors - Total number of "Futures" brochures distributed - 3,000.

Total number of responses returned - 541.

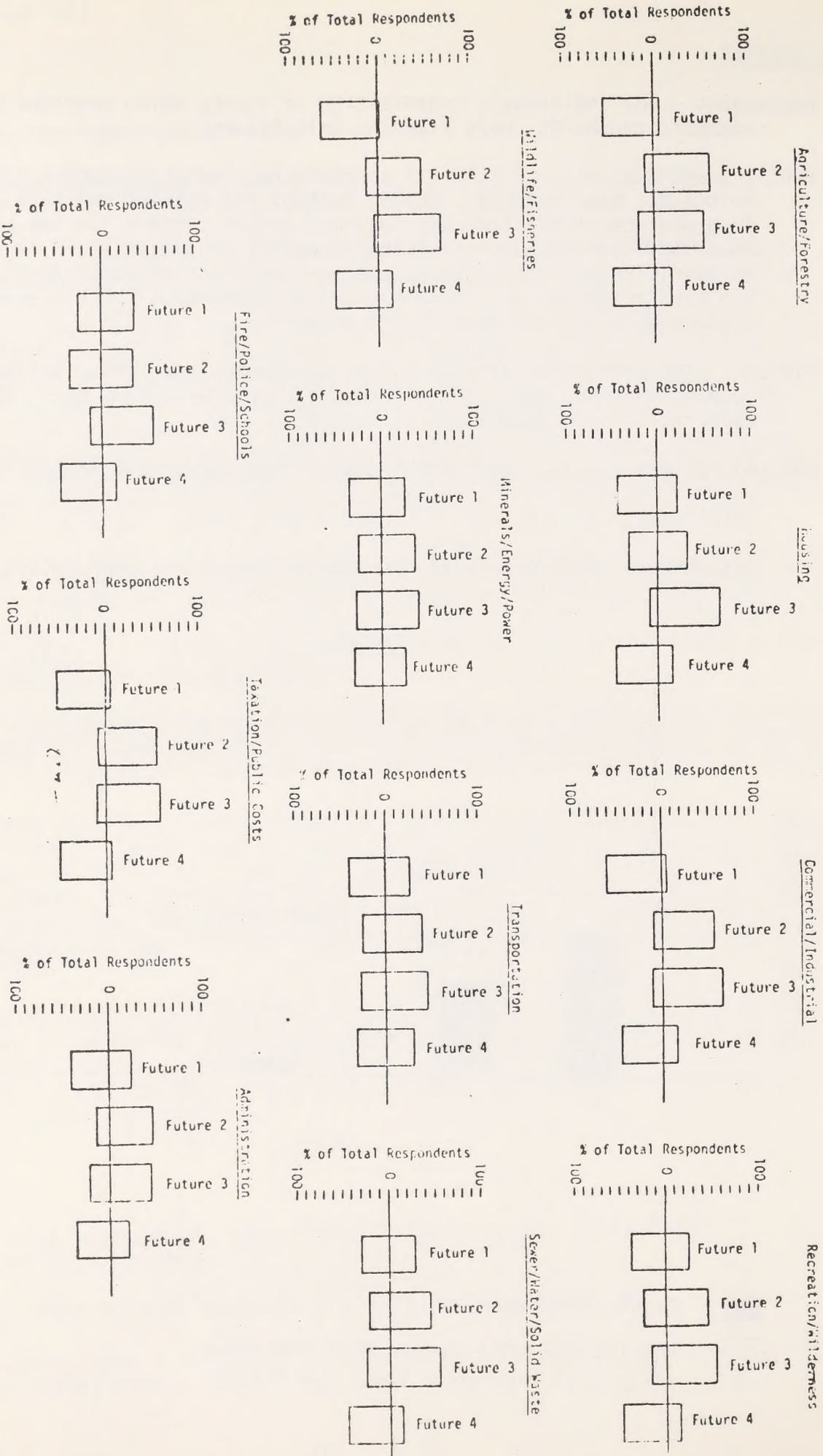
Assumptions which determined population levels for each Future.

FIGURE 1



- Future Preferred
- Housing Element - Future Most Preferred
- *
- Associated Population Level per Future

FIGURE 2



NOTE: Bars above 0 line indicate % of Respondents most preferring a Future; bars below 0 line indicate % of Respondents least preferring a Future.

APPENDIX

CLACKAMAS COUNTY	Planning Department	Ken Dauble
		Dave Patterson
	Department of Public Works	Carl Knee
		Dave Abraham
		Jerry Marshall
HOOD RIVER COUNTY	Planning Department	Dave Porter
	Department of Public Works	Ronald Merry
STATE OF OREGON	Wildlife Commission	Ken Thompson
		Gene Herb
	Fish Commission	Ronald Hasselman
	DEQ	Bob Gilbert
		Steve Carter
		Pat Hanarhan
	Water Master	Keith Palmer
	Water Resources Board	Albert Wright
	Engineers Office	Fred Lissner
	Dept. of Transportation	Rob Cameron
		Tom Schwab
		Craig Markam
OREGON STATE UNIVERSITY		Prof. Chuck Dane
C.R.A.G.		Herb Beals
B.L.M.		Hank Blessing
U.S.F.S.	Regional Office	Fred Hall
	Supervisor's Office	John White
		Mary Moore
		Nance Meador
		Gene Tomlin
		Richard Shaffer
		Chuck Whitt
		Richard Ross
		Kirk Horn
		Greg Halverson
		Pete Patterson
		Lyal Zaugg
	Zigzag Ranger District	Warren Olney
	Hood River Ranger District	Miles Weaver

EXHIBIT K

MT. HOOD PLANNING UNIT

ITS WILDLIFE

"A Report for Land Use Planning - 1975"

By Kirk M. Horn
Field Biologist
MDT, Mt. Hood N.F.

MT. HOOD PLANNING UNIT

"WILDLIFE"

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INTRODUCTION

Location:

The 159,000 plus acre planning unit is located east of Portland, Oregon in Clackamas and Hood River Counties. It extends from Cherryville on the west to the East Fork of Hood River drainage on the east, and from Parkdale area on the north to the Still Creek drainage on the south.

Geology:

A geologic story of the planning unit is, of course, dominated by Mt. Hood itself. To better understand the unit's geology and how it relates to and influences the biology of the area, a chronological look at geologic events is in order.

As the evolutionary story of terrestrial animals must start with the mother sea, so too must the geologic story of Mt. Hood and its surroundings.

times
From Cretaceous/(63 to 135 million years ago), volcanic forces pushed the Blue and Klamath mountain regions up from ocean beds which probably extended from lower California to the Aleutian Islands. During this epic of warm, uniform climates, there was continual volcanic activity. Uplifting formed a dike structure, where the Sierra Nevada Range of California and the Cascade Range of Oregon and Washington are now, into geologically, geographically and climatically dissimilar areas. The country to the west became influenced by a marine realm, the east by a continental realm. This elevated formation caused much of the eastern interior realm to drain and the seas to retreat, never again to flood over the Cascade Range.^{1/}

These closing events of the Cretaceous were ushered out by an evolutionary explosion of mammals, and to a lesser extent, birds and plants. The flowering plants (Angiosperms) were undergoing modernization and extension in this "age of mammals," Tertiary period. If man could have looked in on the Mt. Hood Planning Unit, he would have seen to the east green forests of flowering shrubs and trees, such as fig, magnolia, ginkgo and cinnamon. Towering sequoia would have outstretched today's Douglas fir in height. Animals such as the three-toed horse, saber-toothed cats, rhinoceros, and crocodile flourished in the abundant vegetation. To the west, warm seas saturated what is now the Willamette Valley and the northern coastal range. This geologic calm which lasted about 38 million years (Pliocene, Eocene, Oligocene) ended early in the Miocene. Rumbles deep in the earth announced the coming of the age of volcanism. The Cascade Hills, later to become the Cascade Mountains, were starting to be pushed up. The igneous rock, now known as the Columbia River lava formation, began to heave up from the earth and erected the foundation for the Cascade Mountains. By the end of the Miocene (14 million years ago), a great sea of basalt had poured around the major mountain peaks (Blue and Wallowa Mountains) to form Oregon's plateau country east of the Cascades. The coast range was growing and excluding the sea from southwestern Oregon. New types of plants and animals replaced the old, and the Cascade Hills were not high enough to influence the east-west climatic conditions.

During this epoch (Pliocene), building of mountains by igneous extrusions continued. It is now referred to as the Cascade Revolution--and these mountains attained their greatest height.

This mountain building revolution had not ended on Mt. Hood when the Pleistocene glaciers started to form. As Mt. Hood is composed largely of soft, fragmented volcanic elements, interlaced with flows of hard lava, glaciers and the streams emitted from them did and still have a great influence on the geology of the Planning Unit. With a cursory glance at Mt. Hood, one can readily see how the 12 glaciers have gouged deeply into the upper mountain and the streams flowing from them cut mercilessly into the lower mountain. As one traverses the mountain at the 6,000 foot elevation or less, the continual climbing into and out of the steep unstable canyons is testimony to the active tearing-down process on the mountain.

In summary, the repeated forces of volcanism, glaciation, weathering, erosion, and tectonics tell most of the planning unit's geologic story. These very forces are at work today and have a very definite effect on the planning unit.2/, 3/, 4/

Faunal Variety:

If there is any one, single, outstanding biological feature about the Mt. Hood Planning Unit, it is the great species diversity among the different plant and animal communities. The Planning Unit's diversity is a resource--a very delicate resource made of interacting systems which are not only more complex than the land manager might think--probably even more complex than the land manager can think. If the Planning Unit and immediate land outside the Unit area is to retain any semblance of the mountain motif, this biological diversity is one of the elements which must be planned for.

Plants form the basic living element of any natural biotic community.* Vegetation not only serves as the basis for any food chain, but also provides the animal community with shelter from weather and enemies. In addition, it often provides the sites necessary for normal animal reproduction. The wildlife analysis for the Mt. Hood Planning Unit is primarily based on these facts, plus the law of interspersion which deals with the interaction between different habitat* types in close association with one another. When two different communities join together, they form an "edge" or ecotone.* This means when two or more habitat types come together, the created "edge(s)" will be more favored as wildlife habitat than a single community alone. Both the number of animal species and the total biomass* will be greater in an ecotonal site than any site within a single habitat type.

Depending on the wildlife species and their different needs at different times of the year, most animals must be able to reach (come in contact with) several vegetative communities within a given period of time. For example, during the breeding season of the mountain quail (Oreortyx pictus), there appear to be three to five habitat types needed, namely a conifer forest (possibly old growth), brush community and grass-forb openings. At least one of these areas must have gravel and possibly dust. Nearby water is also required. As the home range* or cruising radius of these birds appears to be small (possibly 1/4 square mile or less) it is essential for the needed ecosystems to be closely interspersed.

Based on observations mainly from the Huckleberry, East Hood River, Badger-Jordan, Bull Run and Mt. Hood Planning Units, this writer feels the vertical vegetative layering within the first 50 feet (ground up) of the forest canopy is also an important determinant of species variety and density, especially avifauna. (See Appendix D) In other words, the greater the diversity in the vegetative layering, the greater the faunal variety and density. The chart on page 1b exemplifies the vertical profile of a typical plant community on the planning unit, and reflects the vegetative layering within the forest canopy. By applying this type of reasoning to the plant communities presented in Appendix A, it is possible for one to simulate diversity in vertical vegetative layering and estimate relative faunal diversity (especially avifauna) of a given ecosystem.

Several research efforts lend support to this concept. For example, Anderson, S. and H. Shugart, 1974, ^{11/} have found in a Tennessee study that the downy woodpecker (a bird common to Mt. Hood Planning Unit) apparently selects preferred habitat on the basis of understory vegetation.

* See glossary

In Washington, Sturman, A., 1968 ^{12/} found that the canopy volume and upper-story (vegetative layering under the canopy) were significant in relation to species abundance of the black capped and rufus-sided chickadees.

Other research is also supportive of vegetative layering in terms of habitat requirements. MacArthur, H. et al, 1966, ^{15/} has shown the relationship between habitat selection and species diversity. Hilden, O., 1954, ^{13/} has discussed quite thoroughly factors which play a part in habitat selection by birds, one element of which is vegetative diversity. Karr, J., 1968, ^{14/} has shown that bird species diversity and energy requirements of bird populations are related to habitat selection. From this and research by Hilden, we can assume that if different bird populations cannot locate desirable habitat types, a given avian population in a specific area will be surviving (if at all) in a stress situation. To put it another way, the faunal variety and diversity of a given ecosystem is a measuring stick for environmental quality.

From the above discussion, we can see that the species variety and species density of any area is dependent on the vegetative composition of the plant community and the interspersions of these communities in relation to the cruising radius* of the animals in question. By analyzing the community type, applying the law of interspersions and knowing at least some of the environmental needs of the Mt. Hood Planning Unit animals, ^{16/} we can start to understand species occurrence, potential and importance.

To help indicate the potential locations of animal diversity, an overlay map showing major ecotonal regions having slopes of less than 50% is filed with the Division of Land Use Planning in the Mt. Hood National Forest Supervisor's Office. Also, while conducting timber stand exams in the planning unit, dominant vegetative composition was noted. Typical vegetative community forming the ground cover (vegetative layering) in the timber stand areas examined during the land use planning process are presented in Appendix A. Also, natural, terrestrial and aquatic openings to be found in the planning unit are presented. Through the efforts of Nance Meador, geographer with the Mt. Hood Land Use Planning Team in Portland, and Dr. Fred Hall, plant ecologist at the U.S.F.S. Regional Office, Portland, Oregon, considerable effort was expended to correlate plant community composition with soils, site index and other computerizer features. This data and method is available from Nance or Fred.

Wildlife in General:

In short, the Planning Unit supports a great variety of wildlife species, with no great number of any one species.

This fact is mainly due to the area's geography. The tremendous influence of Mt. Hood and its associated range of ridges has separated the Planning Unit into two dissimilar climatic regions. The great relief patterns found between Oregon's highest summit (Mt. Hood at 11,245 feet elevation) and elevations less than 800 feet, spreads across four major vegetative types, i.e., low land forests of hemlock and Douglas fir, the silver fir type, the subalpine forest of mountain hemlock and subalpine fir, and the alpine life zone. (See Plant Community Composition - Appendix A.)

When one combines these major (macro) vegetative groups with the micro habitat types generated by relief patterns, east-west climatic differences, elevation, influences of the Columbia Gorge and a myriad other aspects, the Planning

Unit becomes an area of many habitat types, hence a home for many animal species. (See Faunal Variety)

Winter Range:

A rapidly diminishing suitability of the Planning Unit is the winter range for deer and elk.

As the limiting factor for these animals is winter range, it is necessary for the land manager to be aware of management decisions in relation to winter range. The following elements were considered in constructing the winter range map:

1. Winter Range: The winter range for the Planning Unit is mainly confined to an area 2,000 feet in elevation and below. On south exposures, the winter range may extend to higher elevations, and of course it fluctuates from year to year depending on the weather.
2. South Aspects: South aspects are an important factor of a winter range, as it allows the animals an opportunity to warm up on sunny days and it loses snow at a faster rate than other aspects.
3. Ecotonal Areas: If given the opportunity, deer and elk will feed in ecotonal areas. There is evidence to suggest that deer and elk also utilize mature timber stands (areas without ecotones) for cover from weather and enemies, plus feeding. By overlaying the ecotone map over the winter range, these areas can be located.
4. Harassment: Because deer and elk are usually in their poorest health while in the winter range, harassment becomes an important element, especially around residential areas such as found in the Planning Unit. To determine the harassment of an area, the following elements were considered, i.e., residential units per acre, roaded motorized use, non-roaded motorized use, trail hiking, free ranging dogs, and cross-country skiing and hiking. See Appendix B for a key to estimate harassment levels with the above elements.

When combining the above elements, it becomes readily apparent that the winter range for the Planning Unit is not particularly of high quality. It is presently a winter range under considerable stress, and land use decisions within the winter range area should be made with open eyes.

A map-overlay reflecting the winter range locations, south aspects, and harassment level is filed with the Mt. Hood National Forest Land Use Planning Team.

Wildlife Specifics:

The Planning Unit harbors a considerable number of animals which are little known and deserve special attention. The following is part of their story.

Tenyptherix hageni (Dragon fly): Confined to a simulated post glacial bog of the Still Creek drainage lives one of the Planning Unit's most interesting insects--an ancient dragon fly. In North America there are approximately 200,000 species of dragon flies, of which 50% are rare and 1% are endangered.

(The terms rare and endangered are not part of the national list of specially classified species.) The T. hageni population of Still Creek is part of that 1%. T. hageni was first described in the late 1800's, and by 1971 only eight populations were known to be active, one of which is in the Mt. Hood Planning Unit and the only one in Oregon described.

This dragon fly (Pepaluribae) dates back 150,000,000 years to a time long before volcanic forces started forming the destiny of the Mt. Hood Planning Unit. The ancestors of this beast were flying alongside the Mesozoic dinosaurs. In an evolutionary sense, T. hageni is a very primitive organism. Its life style is limited to post glacial bog ecosystems scattered over the mountainous areas of Oregon, Washington and California. This stenoecious (specialized to a very narrow range of habitats) need places T. hageni in the same precarious position as the Planning Unit's spotted owl. The population's longevity is proportional to the atrophy of its habitat, its quality and size.

Given present conditions, the extension of T. hageni is probable within 10,000 years--not at the hand of man but for natural reasons. The ecologic succession in the Still Creek bog has quickened within the past decade, due in part to a warming trend in North American climates. When the bog vegetation gives way to vegetation such as alder, willow, and conifers, T. hageni cannot breed or lay eggs in the bog moss.

Life History and Behavior:

As one observes the one to two hundred adults which fly in the Still Creek population, several things become obvious.** The dragon flies alternately resting on the rocks and chasing each other are the males. They hold territories in which they rest on a favorite perch from which they defend their own area against one another. When a male sees a female dragon fly, he attempts to mate with her. He is usually successful, and if you see two adults hooked together flying up into the tree tops, that is a mated pair. When a male is alone, you might see him dart from his rock and return. This is a food catching behavior. If he catches a fly or damselfly (his primary diet) he will eat on them from his perch until distracted by another male entering his territory or by females. He responds most readily to females, secondly to other males and lastly to food.

At night and during bad weather, the adults rest high in the trees. When the morning sun warms, they begin to fly and return to the bog area. In the late afternoon when shadows overtake them, they begin moving into the sunlight areas, then up into the trees again for the night.

Their flight season begins in mid-June, shortly after the snows melt, and last until late August. During that time they gradually increase in number until mid-July and then gradually decline in number. An individual adult

** There are at least three species of dragon flies in the Still Creek bog area. Two species have yellow and black body markings (one of which is T. hageni), and one species has blue and black body markings. Species other than T. hageni spend most of their time on the wing. Only T. hageni spends time very close to the moss and bog looking for mates and laying eggs.

lives about one month. During that time, each male must secure a suitable territory and defend it, breed with as many females as possible, and find food to keep his body metabolism functioning at this one month furious pace. The female must not only find food, she must also find a mate plus deposit her fertilized eggs in a suitable location within the moss of the bog. All this happens under the assumption the adults do not fall prey to ants, birds, frogs, crayfish, or other predators. If a bred female is successful in laying eggs and immature insects (most of which are eaten by other organisms) develop for four or more years in the water, it is interesting to note that the nymph stage (which lives mainly under the bog rocks and mosses during the later part of its metamorphosis) is very cannibalistic, hence only one *T. hageni* nymph usually lives under a single shelter. 5/

Grylloblattidae:

The Planning Unit is home--perhaps the only home on the forest--for another interesting insect of the Family Grylloblattidae.

This ancient, secretive and timid insect family has less than a dozen species, two in Japan and the rest in North America, all limited to Pleistocene glaciated areas. 6/ The Mt. Hood species is an alpine-subalpine insect with habitat requirements of low temperature and high humidity. The Mt. Hood population can be found in snow communities along the margins and crevices of permanent snow fields or glaciers. It is possible that this beast can also be found in hypolethic habitats at the toe of active glaciers and under half-buried rocks of one to six feet in diameter of the alpine life zone. 7/

For the hardy soul wanting to capture one of these critters, it helps to have a pair of "non-slip" shoes, a spotlight, and a desire to walk around on the steep glacier ice or permanent snow fields in the black of night. This writer has observed this beast on the toe of the Sandy Glacier.

While very, very few of the forest visitors or forest managers know of this critter's existence, it does add an interesting twist to the Planning Unit's faunal variety, plus it provides a unique educational and recreational experience for the forest visitor.

Leucosticte tephrocotis (gray-crowned rosy finch)

Restricted to the alpine zone on Mt. Hood, this spring and summer visitor can easily be observed above the 7,000 foot elevation, mainly on the east and south aspects. The environmental requirements make this bird of special interest to natural history. During its breeding season it seeks out the bleak, windswept ridges, moraines, glaciers and landslide areas in the land of perpetual snow and ice, the alpine life zone.

It builds its nest in the crevasses and crannies of rock outcropping. It can be seen foraging for food on the surface of snow fields and glaciers. Just probably, these birds antedated man with his refrigeration by thousands of years, as they can be seen feeding on the chilled insects that have become benumbed by the cold. This writer has also seen the rosy finch feeding on the flowers of Cassiope mertensiana (white mountain heather.)

While it is not known for certain, the bird probably winters east of Mt. Hood in the Central Oregon plateau country, or possibly to the north in the Washington sage country.

With the increasing recreational pressure bearing down on Mt. Hood's alpine zone, especially on the south and east aspects, concern is growing among biologist and wildlife viewers for the finches well being. How many chair lifts and summertime skiers and hikers this bird can cope with in its nesting area is not known.

Batrachoseps wrighti (Oregon slender salamander) 8/

Known only from five sites in Oregon, two of which are from the Mt. Hood Planning Unit, near Wemme and Cherryville. This endemic* salamander is usually associated with plant communities of Douglas fir, cedar, and big leaf maple. This animal becomes active following melting snow and absence of freezing weather. Based on the skimpy knowledge about this species, it appears to be nowhere common and requires considerable effort of someone familiar with its natural history to locate and collect it.

Marmota flaviventris (yellow-bellied marmot) 10/

The fact that this little beast can be found in the Planning Unit at all can be attributed to the alpine life zone. Its normal range extends across the White Mountains and Sierra Nevada's of California and along the crest of the Oregon and Washington Cascades. Its rather specific habitat requirements ties it to the talus slopes and boulder fields associated with alpine or alpine-like ecosystems.

The Mt. Hood's population appears to be restricted to the south, southeast and southwest aspects of the alpine life zone and associated timberline ecotones. Most of the Mt. Hood population is probably colonial, though there are a few transient and/or solitary individuals living in marginal (peripheral*) habitat sites. This writer has noted that the number of solitary individuals appear to vary in both number and location from year to year, while the colony groups appear to remain fairly constant in number and colony locations.

Research has shown that social behavior and suitable habitat is a major factor affecting the distribution and population dynamics of the yellow-bellied marmot. It is important for the land manager to keep this in mind. While the encroachment of humans into the alpine life zone does not appear to be detrimentally affecting the marmot, we do not know what the tolerance threshold of the marmot is for man. As we continue to inundate the alpine life zone with more ski facilities and hiking activities, trample the fragile alpine vegetation (which the marmot is dependent on for food), and interfere with the marmot and other alpine animals' normal behavioral patterns, we should anticipate a decrease in the number of these creatures.

Other specifics: For notes on other fauna requiring specific habitat types, see Threatened and In Trouble, and Snags and Holes.

* See glossary

Snags and Holes

The existing stands of old growth (conifer and deciduous) produce an abundance of snags in the Planning Unit. This has attracted an impressive number of animals which are dependent on or use the snag habitat.

As research unfolds the natural history of these critters, it is becoming clear that these animals are very beneficial to man's well-being. ^{16/} Not only do they have a tremendous scientific and aesthetic value, they should be recognized as an important management tool to maintain a healthy forest, which in turn is a financial asset to man's pocketbook. Annually American forests realize tremendous economic loss from insects and rodent damage. Evidence is now showing that cavity users (which are mainly tied to snag habitat) play an inexorable role in the biological control of forest insect and rodent populations.

Research has shown there is a functional and numerical response of cavity users to fluctuations in insect and rodent populations. Their major role in biological control is probably one of prevention rather than control of epidemics after they start.*

Cavity users are not one of America's "renewable resources." When we consider the increasing pressures against the use of chemical agents to control forest pests (especially in watersheds), it may be desirable to manage snags and holes as well as board feet in the same timber harvest area.

* Baldwin, P. 1968. Woodpecker feeding on Engelmann spruce beetle in windthrown trees. USFS Res. Paper - RM-105, 4p. Rocky Mt. Exp. Stn., Fort Collins, Colo.

Baldwin, P.H. 1968. Predator-prey relationships of birds and spruce beetles. N. Cent. Entomol. Soc. Am. Proc. 23:90-99.

Beebe, Spencer. 1974 (Jan). Relationships between insectivorous hole-nesting birds and forest management. Yale Univ. Sch. of Forestry and Environmental Studies. New Haven CT, 06511:49;;.

Graham, D. 1975. Deposition - Bull Run Law Suit of Mt. Hood N.F. (Graham - from PNW - Director of Forest Insect and Disease, Corvallis, OR)

CAVITY AND SNAG USE BY FAUNA OF THE MT. HOOD PLANNING UNIT

<u>Species</u>	<u>Primary Cavity Animal (1)</u>	<u>Secondary Cavity Animal (2)</u>	<u>Nest or Den in Cavity Occasionally</u>	<u>Dependent on or Uses Snag Habitat (3)</u>
<u>AVIFAUNA:*</u>				
White-breasted nuthatch	x			x
Red-breasted nuthatch	x			x
Pygmy nuthatch	x			x
Hairy woodpecker	x			x
Downy woodpecker	x			x
White-headed woodpecker	x			x
Black-backed 3 toed "	x			x
Yellow-bellied sapsucker	x			x
Pileated woodpecker	x			x
Lewis' woodpecker	x			x
Common flicker	x			x
Wood duck		x		x
Common goldeneye		x		x
Barrow's goldeneye		x		x
Bufflehead		x		x
Harlequin duck		x		x
Hooded merganser		x		x
Common merganser		x		x
Spotted owl		x		x
Barn owl		x		x
Saw-whet owl		x		x
Horned owl			x	x
Screech owl		x		x
Pygmy owl		x		x
American kestrel		x		x
Goshawk			x	x
Tree swallow		x		x
Violet-green swallow		x		x
Mountain bluebird		x		x
Black-capped chickadee		x		x
Mountain chickadee		x		x
Chestnut-backed chickadee		x		x
Starling		x		x
House sparrow		x		x
Vaux's swift		x		x
House wren		x		x
Winter wren		x		x
Bewick's wren		x		x
House finch		x		x
Brown creeper		x		x
Ruffed grouse			x	
Turkey vulture				x
Sharp-shinned hawk				x
Cooper's hawk				x
Red-tailed hawk				x
Golden eagle				x
Bald eagle				x
Belted kingfisher				x
Olive-sided flycatcher				x

Species	Primary Cavity Animal (1)	Secondary Cavity Animal (2)	Nest or Den in Cavity Occasionally	Dependent on or Uses Snag Habitat (3)
MAMMALS:*				
Chickaree		X		X
Flying squirrel		X		
Marten		X		X
Townsend chipmunk		X		X
Fisher		X		X
Red tree mouse		X	X	
Bushy-tailed woodrat		X		X
Raccoon		X		
Opossum		X		
California myotis		X		X
Little brown bat		X		X
Big brown bat		X		X
Silver-haired bat		X		X

* See Avian and Mammal checklist for Mt. Hood Planning Unit.

- (1) Primary cavity use: These animals excavate their own cavity in trees or snags and always den or nest in cavities.
- (2) Secondary cavity use: These animals are nonexcavators and are dependent on cavities in trees and snags made by the primary group or by natural means such as decay. These animals almost always den or nest in cavity.
- (3) Snag: Any standing dead tree or portion of the stem of a standing dead tree with a minimum DBH of ten inches and a minimum height of ten feet. No differentiation between hard or soft snags is made. Nor is the use of a snag by a given species explained. The purpose of this column is to demonstrate the need for snag habitat in the Planning Unit.

Value of Wildlife:

Throughout the United States, if not most of the world, there is a growing interest in wildlife viewing. Evidence of this can be gleaned from the growing numbers of people joining organizations related to wildlife viewing, e.g., Audubon Society, Cooper's Ornithological Society, Pacific Northwest Small Bird and Mammal Society, to name a few. Another indicator of a growth in metropolitan Boston, 1974--an estimated \$1,680,000 was spent on bird feeding. This does not include the purchase of bird feeders, binoculars, field guides or other related items for bird watching. ^{17/} In Oregon it has been estimated that 688,000 people feed birds and 245,000 people install bird houses and nest boxes. ^{18/}

For a one year period during 1973 and 1974, the Oregon Wildlife Commission sponsored a survey to determine wildlife oriented recreation in Oregon. The survey was designed by the Oregon State University Survey Research Center and conducted by GMA Research Corporation of Portland, Oregon. The results of this survey show that 95% of Oregon adult population engages in some sort of wildlife oriented activity, such as hunting, fishing or wildlife viewing. A breakdown of the wildlife oriented activities Oregonians participate in goes like this: ^{18/}

- 93% of Oregon's adult population view wildlife.
- 60% - Passive viewing (television programs, listening to speakers or lecturers, movies, reading articles or books about wildlife.)
- 33% - Active viewers (bird watchers, bird feeding, wildlife topography.)
- 48% - Wildlife viewing only (do not hunt or fish).
- 25% fish and view wildlife, but do not hunt.
- 16% fish, view wildlife and hunt.
- 4% hunt and view wildlife but do not fish.

From the above one can readily see that Oregonians and all of America are experiencing a value from wildlife and in most instances it is not a value one can hang a dollar sign on. It is also becoming evident that the viewing value of wildlife is going to increase as the people population continues to encroach and tinker with the natural ecosystems.

To evaluate forest resources in terms other than yards of rock material, CFS of water or board feet of lumber, the following is a subjective attempt to display a value for wildlife.

FAUNAL CHECK LIST
FOR
MT. HOOD PLANNING UNIT

Observation Index Codes*

- VC - Very common; 10 or more birds per day/observer.
- C - Common; 1-9 birds per day/observer.
- U - Uncommon; 0-5 birds per day/observer or recorded by reliable sources. (Persons known for their integrity in bird identification, or accurate description of an avian sighting which can be positively identified.)
- R - Rare; 0-5 birds per year/observer or recorded by reliable sources.
- O - Occasional; not seen every year.
- I - Irregular; abundance and/or occurrence fluctuates greatly from year to year.
- ? - Status undetermined.

Seasonal Status Codes

- R - Resident may be found all or most of the year.
- WV - Winter visitor.
- SR - Summer resident in Planning Unit.
- M - Migrant; seen only in transit.
- ? - Status undetermined.

* The observation index is based on: Field Journals II through VIII (1968-1975 by Kirk Horn), Breeding Bird Surveys conducted by Kirk Horn/David Marshall in cooperation with the U.S. Fish & Wildlife Service - Survey route No. 043, coordinates 4534-12130 (1972-1974) and from conducting public wildlife viewing tours out of Timberline Lodge (1965-1969) by Kirk Horn. The occurrence densities apply only to habitat types required by the species in question.

MT. HOOD PLANNING UNIT

SPECIES	***			***		***		Wildl. Value Indicator
	Obsrvd	Expect to Occur	Sea-sonal Status	Observation Index	Wildl. Viewing Value Index	Predator to Forest Pests	Game Animal	
Common Loon		x	R	R	4			4
Western greb		x	?	?	4			4
Pie-billed greb	x		R	R	4			4
Great blue heron	x		R	EC	3			3
Common egret		x	SR	O	4			4
Trumpeter swan	x		WV	R	4		1	5
Canada goose	x		R	R	3		1	4
White-fronted goose	x		WV	O	4		1	5
Mallard	x		R	C	2		1	3
American widgeon		x	M	?	4		1	5
Wood duck	x		R	?	4		1	5
Ring-necked duck	x		R	R	4		1	5
Barrow's goldeneye	x		?	I	4		1	5
Bufflehead	x		WV	O	4		1	5
Harlequin duck	x		SR	O	5		1	6
Hooded merganser	x		R	R	4		1	5
Common merganser	x		R	U	3		1	4
Turkey vulture	x		SR	C	2			2
Osprey	x		R	U	3	1		4
Sharp-shinned hawk	x		R	U	3	1		4
Cooper's hawk	x		R	U	3	1		4
Red-tailed hawk	x		R	U	3	1		4
Rough-legged hawk	x		?	R	4	1		5
Golden eagle	x		R	U	4	1		5
Bald eagle	x		R	U	5	1		6
Marsh hawk		x	?	I	4	1		5
Osprey	x		SR	U	5			5
Gyr Falcon		x	?	?				
Prairie falcon	x		SR	O	4	1		5
Peregrine falcon	x		?	?				3
American kestrel	x		R	C	2	1		3
Blue grouse	x		R	C	2		1	3
Ruffed grouse	x		R	C	2		1	3
Valley quail	x		R	U	3		1	4
Mountain quail	x		R	U	3		1	4
Ring-necked pheasant	x		R	C	2		1	3
Turkey	x		R	R	4		1	5
Virginia rail	x		SR	R	4			4
Cora	x		SR	R	4			4
American coot	x		R	U	3			3
Killdeer	x		R	C	2			2
Common snipe	x		R,SR	U	3			3

Avian List (continued)

SPECIES	Obsrvd	Expect to Occur	Seas- onal Status	Observ- ation Index	Wildl. Viewng Value Index	Preda- tor to Forest Pests	Game Animal	Wildl. Value Indicator
Spotted sandpiper	x		SR	U	3			3
California gull	x		SR	R	4			4
Gull sp.	x		SR	R				
Band-tailed pigeon	x		SR	VC	2		1	3
Rock dove	x		R	C	1			1
Mourning dove	x		R	C	1		1	2
Barn owl		x	?	?				
Screech owl	x		R	U	4	1		5
Great horned owl	x		R	U	3	1		4
Snowy owl	x		?	I	4			4
Pygmy owl	x		R	U	4	1		5
Spotted owl	x		R	U	5	1		6
Great gray owl		x	R	?				
Long-eared owl		x	SR,WR	?				
Saw-whet owl	x		R	R	4	1		5
Poor-will		x	SR	I	5			5
Common nighthawk	x		SR	VC	1			1
Vaux's swift	x		SR	C	3			3
Rufous hummingbird	x		SR	VC	2			2
Calliope hummingbird	x		SR	I	4			4
Alted kingfisher	x		R	C	2			2
Common flicker	x		R	VC	1	1		2
Pileated woodpecker	x		R	C	5	1		6
Acorn woodpecker		x	?	?				
Lewis' woodpecker	x		SR	U	3	1		4
Yellow-bellied sapsucker	x		R	U	3	1		4
Hairy woodpecker	x		R	C	2	1		3
Downy woodpecker	x		R	C	2	1		3
White-headed woodpecker	x		R	?	5	1		6
Black-backed three- toed woodpecker	x		R	?	5	1		6
Western kingbird	x		SR	R	4			4
Say's phoebe	x		SR	I	4			4
Willow flycatcher	x		SR	VC	2	1		3
Hammond's flycatcher		x	SR	?	4	1		5
Dusky flycatcher	x		SR	?	4	1		5
Gray flycatcher	x		SR	U	4	1		5
Western flycatcher	x		SR	U	3	1		4
Western wood peewee	x		SR	C	2	1		3
Olive-sided flycatcher	x		SR	C	2	1		3
Horned lark	x		R	C	3			3
Olive-green swallow	x		SR	VC	1			1
Tree swallow	x		SR	C	2			2
Rough-winged swallow	x		SR	VC	2			2
Barn swallow	x		SR	VC	1			1

Avian List (continued)

SPECIES	Obsrvd	Expect to Occur	Seas- onal Status	Obser- vation Index	Wildl. Viewng Value Index	Preda- tor to Forest Pests	Game Animal	Wildl.Value Indicator
Cliff swallow	x		SR	C	2			2
Gray jay	x		R	C	2			3
Steller's jay	x		R	VC	1			1
Scrub jay	x		R	C	3			3
Common raven	x		R	C	1			1
Common crow	x		R	C	2			2
Clark's nutcracker	x		R	C	3			3
Black-capped chickadee	x		R	C	2			2
Mountain chickadee	x		R	C	2			2
Chestnut-breasted chickadee	x		R	C	2			2
Common bushtit	x		R	C	3			3
White-breasted nuthatch	x		?	R	4	1		5
Red-breasted nuthatch	x		R	VC	2	1		3
Pygmy nuthatch	x		?	R	4	1		5
Brown creeper	x		R	C	3	1		4
Dipper	x		R	VC	2			2
House wren	x		R	U	3	1		4
Winter wren	x		R	C	2	1		3
Bewick's wren	x		R	U	3	1		4
Rock wren	x		SR	C	3	1		4
Robin	x		SR,R	VC	1			1
Varied thrush	x		R	VC	2			2
Hermit thrush	x		R	VC	2			2
Swainson's thrush	x		SR	C	2			2
Western bluebird		x	?	?				
Mountain bluebird	x		SR	C	3			3
Townsend's solitaire	x		R	C	2	1		3
Golden-crowned kinglet	x		R	U	3			3
Ruby-crowned kinglet			SR	C	2			2
Water pipit	x		SR	R	4			4
Bohemian waxwing		x	M	I	4			4
Cedar waxwing	x		R	C	2			2
Northern shrike	x		WV	U	3			3
Loggerhead shrike		x	SR	U	3			3
Starling	x		R	VC	1			1
Solitary vireo	x		SR	C	2			2
Red-eyed vireo	x		SR	C	2			2
Warbling vireo	x		SR	C	2			2
Orange-crowned warbler	x		SR,V ?	C	3			3
Nashville warbler	x		SR	U	3			3
How warbler	x		SR	VC	1			1
Yellow-rumped warbler	x		SR	VC	1			1
Black-throated gray warbler	x		SR	C	2			2

Avian List (continued)

SPECIES	Obsrvd	Expect to Occur	Seas- onal Status	Obser- vation Index	Wildl. Viewng Value Index	Preda- tor to Forest Pests	Game Animal	Wildl. Value Indicator
Townsend's warbler	x		SR	C	3			3
Hermit warbler	x		SR	C	3			3
MacGillivray's warbler	x		SR	VC	1			1
Yellowthroat	x		SR	R	4			4
Yellow-breasted chat	x		SR	R	4			4
Wilson's warbler	x		SR	VC	2			2
House sparrow	x		R	VC	1			1
Western meadowlark	x		R	VC	2			2
Yellow-headed blackbird		x	?	I	4			4
Red-winged blackbird	x		SR	VC	1			1
Northern oriole	x		SR	C	2	1		3
Brewer's blackbird	x		R	VC	1	1		2
Western tanager	x		R	VC	2	1		3
Black-headed grosbeak	x		SR	VC	2			2
Lazuli bunting	x		SR	C	3			3
Evening grosbeak	x		R	VC	2			2
Purple finch	x		R	U	3			3
Cassin's finch	x		R	U	3			3
House finch	x		R	VC	2			2
Gray-crowned rosy finch	x		?	C	3			3
Pine siskin	x		R	VC	2			2
American goldfinch	x		R	VC	2			2
White-winged crossbill	x		?	I	4			4
Spotted towhee	x		R	C	2			2
Savannah sparrow	x		?	?				
Vesper sparrow	x		?	I	4			4
Dark-eyed junco	x		R	VC	1			1
Chipping sparrow	x		SR	VC	2			2
Brewer's sparrow	x		SR	U	4			4
White-crowned sparrow	x		R	VC	2			2
Fox sparrow	x		R	C	3			3
Lincoln's sparrow	x		SR	VC	2			2
Song sparrow	x		R	VC	2			2

MT. HOOD PLANNING UNIT

SPECIES	Obsr'd	Expect to Occur	Seasonal Status	Observation Index	Wildl. Viewing Value Index	Predator to Forest Pests	Game Animal	Wildl. Value Indicator
<u>Didelphidae</u>								
<u>Didelphis marsupialis</u> (common opossum)	x		R	U	3			3
<u>Soricidae</u>								
<u>Sorex trowbridgii</u> (Trowbridge shrew)	x		R	C	2			2
<u>S. vagrans</u> (vagrant shrew)	x			U	3			3
<u>S. palustris</u> (water shrew)		x	?	?				
<u>S. bendirii</u> (marsh shrew)		x	?	?				
<u>Talpidae</u>								
<u>Neurotichus gibbsii</u> (shrew-mole)		x	?	?				3
<u>Scapanus townsendii</u> (Townsend mole)	x			U	3			
<u>Vespertilionidae</u>								
<u>Myotis lucifugus</u> (little brown myotis)		x	?	?				
<u>M. yumanensis</u> (Yuma myotis)		x	?	?				
<u>M. evotis</u> (long-eared myotis)		x	?	?				
<u>M. thysanodes</u> (fringed myotis)		x	?	?				
<u>M. volans</u> (hairy-winged myotis)		x	?	?				
<u>M. californicus</u> (California myotis)	x			VC	1			1
<u>Lasionycteris noctivagans</u> (silvery-haired bat)	x			U	3			3
<u>Eptesicus fuscus</u> (big brown bat)		x	?	?				
<u>Lasiurus cinereus</u> (hoary bat)		x	?	?				
<u>Plecotus townsendii</u> (lump-nosed bat)		x	?	?				
<u>Ochotonidae</u>								
<u>Ochotona princeps</u> (pika)	x			VC	2			2
<u>Leporidae</u>								
<u>Lepus americanus</u> (snowshoe hare)	x			C	2			2
<u>Apodonta</u>								
<u>Apodontia rufa</u> (mountain beaver)	x			VC	1			1

Mammal List (continued)

SPECIES

Sciuridae

Marmota flaviventris (yellow-bellied marmot)
 Otospermophilus beecheyi (Beechey ground squirrel)
 Callospermophilus lateralis (Sierra Nevada golden-mantled ground squirrel)
 Eutamias minimus (least chipmunk)
 E. amoenus (yellow pine chipmunk)
 E. townsendii (Townsend chipmunk)
 Tamiasciurus douglasii (Douglas squirrel)

Sciuridae, Pteromyinae

Glaucomys sabrinus (northern flying squirrel)

Geintudae

Thomomys monticola (mountain pocket gopher)
 T. mazama (Mazama pocket gopher)

Castoridae

Castor canadensis

Cricetidae

Peromyscus maniculatus (deer mouse)
 Neotoma fuscipes (dusky-footed woodrat)
 N. cinerea (bushy-tailed woodrat)
 Clethrionomys occidentalis (western red-backed mouse)
 Phenacomys longicaudus (red tree mouse)
 Microtus oregoni (Oregon meadow mouse or creeping vole)
 M. townsendii (Townsend meadow mouse)

Zapodiadae

Zapus princeps (western jumping mouse)

Erethizontidae

Erethizon dorsatum (porcupine)

Capromyidae

Myocastor coypu (nutria)

Obsr'd	Expect to Occur	Seas-onal Status	Obs-ervation Index	Wildl. Viewing Value Index	Preda-tor to Forest Pests	Game Animal	Wildl. Value Indi-cator
x			C	3			3
x			VC	1			1
x			VC	2			2
x			VC	1			1
	x	x	?				
x		R	U	3			3
x		R	VC	2			2
	x	R	C	3			3
	x	?	?				
x		R	U	3			3
x		R	C	3			3
x		R	VC	2			2
x		R	U	3			3
x		R	C	2			2
x		R	C	3			3
x		R	C	3			3
x		R	U	3			3
x		R	U	3			3
x		R	C	2			2
x		R	U	3			3
x		R	R	4			4

SPECIES

	Obsrvd	Expect to Occur	Seas- onal Status	Obser- vation Index	Wildl. Viewing Value Index	Preda- tor to Forest Pests	Game Animal	Wildl. Value Indi- cator
<u>Canidae</u>								
<u>Canis latrans</u> (coyote)	x		R	C	2	1		3
<u>Vulpes fulva</u> (red fox)		x	?	?				
<u>Urocyon cinereoargenteus</u> (gray fox)								
<u>Ursidae</u>								
<u>Euarctos americanus</u> (black bear)	x			R	4			4
<u>Procyonidae</u>								
<u>Procyon lotor</u> (raccoon)	x			U	3			3
<u>Mustelidae, Mustelinae</u>								
<u>Martes americana</u> (marten)	x		R	R	4	1		5
<u>M. pennanti</u> (fisher)		x						
<u>M. erminea</u> (ermine)	x		R	R	4	1		5
<u>M. frenata</u> (long-tailed weasel)		x	R	R	4	1		5
<u>M. vison</u> (mink)	x		R	U	3	1		4
<u>Mustelidae, Guloninae</u>								
<u>Gulo luscus</u> (wolverine)		x	?	C	5			5
<u>Mustelidae, Mephitinae</u>								
<u>Spilogale putorius</u> (spotted skunk)	x		R	R	4	1		5
<u>Mephitis mephitis</u> (striped skunk)	x		R	R	4	1		5
<u>Mustelidae, Lutrinae</u>								
<u>Lutra canadensis</u> (river otter)	x		R	R	4			4
<u>Felidae</u>								
<u>Felis concolor</u> (mountain lion)	x		R	O	4	1		5
<u>Lynx rufus</u> (bobcat)	x		R	R	4	1		5
<u>Cervidae</u>								
<u>Cervus canadensis</u> (Canadian elk)	x		R	VC	1			1
<u>Odocoileus hemionus columbianus</u> (black-tailed deer)	x		R	VC	1			1

HERPETOFAUNA CHECKLIST

MT. HOOD PLANNING UNIT

SPECIES	Obsrvd	Expect to Occur	Seasonal Status	Observation Index	Wildl. Viewing Value Index	Predator to Forest Pests	Game Animal	Wildl. Value Indicator
<u>Caudata</u>								
Ambystoma gracile (northwestern salamander)	x		R	C	3			3
A. macrodactylum (long-toed salamander)		x	R	?	4			4
Dicamptodon ensatus (Pacific giant salamander)	x		R	VC	2			2
Rhyacotriton olympicus (Olympic salamander)	x		R	VC	2			2
Taricha granulosa (rough-skinned newt)	x		R	VC	1			1
Plenthodon dunni (Dunn's salamander)	x		R	C	3			3
P. vehiculum (western red-backed salamander)		x	R	?	4			4
Ensatina eschscholtzi (Eschscholtz's salamander)	x	x	R	R	4			4
Batrachoseps wrighti (Oregon slender salamander)		x	R	?	5			5
Aneides farreus (clouded salamander)		x	R	?				
<u>Salientia</u>								
Ascaphus truei (tailed frog)	x		R	VC	5			5
Bufo boreas (western toad)	x		R	C	1			1
Hyla regilla (Pacific tree frog)	x		R	C	2			2
Rana catesbeiana (bullfrog)		x	R	?				
R. pretiosa (spotted frog)			R	VC	5			5
R. aurora (red-legged frog)	x	x	R	?				
<u>Squamata</u>								
Sceloporus occidentalis (western fence lizard)		x	R	U				
Eumeces skiltonianus (western skink)	x		R	U	4			4
Gerrhonotus coeruleus (northern alligator lizard)	x		R	U	3			3
Charina bottae (rubber boa)		x	R	?				
Coluber constrictor (racer)	x		R	?				
Thamophis ordinoides (northwest garter snake)		x	R	?				
T. sirtalis (common garter snake)	x		R	VC	1			1

*** WILDLIFE VIEWING VALUE

Value

- 1 Observation index of very common or common. The Forest visitor not seeking or intending to see wildlife could and would observe this animal. With the aid of a field guide, the animal should be easily identified by the inexperienced wildlife viewer.
- 2 Observation index of very common or common. Ten or more per day can usually be seen, though a wildlife viewer with some experience would have to actively seek this species. With the aid of a field guide, the animal should be easily identified.
- 3 Observation index of common to uncommon (or if more--not in the same location). To observe five or more per day, an experienced wildlife viewer familiar with the planning unit might have to spend considerable time and effort. Special techniques and/or equipment may be needed.
- 4 Observation index rare, irregular or occasional. Observation is usually restricted to a specific type of habitat or area. This animal is not on the specially classified animal list--see Specially Classified Wildlife. It may require considerable effort on the part of the wildlife viewer to locate this animal. Special techniques and/or equipment may be needed.
- 5 This animal is on the specially classified species list or could be considered as peripheral.

The column titled "Predator to Forest Pests" represents those species of biota which are known to prey on forest insects, causing damage to commercial trees, or to prey on rodents injurious to forest trees. (See Snags and Holes section.) One point is assigned to animals in this group.

The column titled "Game Animals" represents those species protected and managed as game animals or fur bearers. One point is assigned to animals in this group.

Threatened and In Trouble

Through the uncountable millennia on earth, thousands of animals have evolved, survived and died. Each species has special adaptations that fit it to a specific niche* in the environment. As new species are produced in a changing environment, some are better adapted to function in an environmental niche and the original occupant is displaced. If the replaced tenant cannot adapt to the change, it is "in trouble." Most of the environmental changes in the past were brought on gradually by climatic and/or geologic changes. With the advent of the human animal, environmental changes have been sped up through his technology and habit of introducing competing species--wild and domestic. Due to man's environmental manipulation, species are now disappearing faster than they are evolving.

The species which cannot adapt to this tinkering or manipulation are the ones "in trouble", and are included on the list of endangered and threatened species.

Why should man be concerned about "those in trouble"? Bluntly, man can survive without having the endangered and threatened species around. He can also survive without golf courses, automobiles, swimming pools, and house pets. Therefore, physical survival is not the point. It might be said that man's existence is an integrated whole which is resultant from and dependent on interactions between his needs, desires and accomplishments. Delete one element and there is no longer a whole. With technology, he can calculate the worth of an environment in board feet, cubic feet of water, jobs, etc., but does he have the wisdom to determine how the total environment fits in with his successful existence as a species?

Unlike the title of a popular publication, wildlife is not "born free", but is a captive of its environment and dependent on it. Neither the Mt. Hood Planning Unit nor the Mt. Hood National Forest can boast of large holdings of a single habitat type such as old growth, alpine life zone, etc. Species tied to a specific habitat type, of which the Mt. Hood Planning Unit has a considerable number, are dependent on land management to maintain these specific habitat types, and cannot tolerate environmental tinkering with their life lines.

If land managers continue to modify these habitat types, man may be taking on a debt he cannot repay.

STATUS OF SPECIAL CLASSIFIED WILDLIFE
WHICH MAY BE LOCATED IN BUT NOT CONFINED TO
the Mt. Hood Planning Unit

SPECIES NAME	Observed	Expected to Occur	OREGON STATE CLASSIFICATION						NATIONAL CLASSIFICATION 7/		
			2/ Endangered	3/ Threatened	4/ Status Undetermined	5/ Unique (USFS only)	6/ Peripheral	Endangered	Threatened	Status Undetermined	
MAMMALS											
<u>Gulo luscus</u> (wolverine)		X		X		X					X
<u>Odocoileus virginianus leucurus</u> (Columbia white-tailed deer)		X	X						X		
<u>Vulpes fulva</u> <u>cacadenensis</u> and <u>macroura</u> (red fox)	X				X						
<u>Martes americana</u> subsp. (marten)		X			X						X
<u>Martes pennanti pacifica</u> (fisher)	X				X						X
<u>Felis concolor</u> (cougar)	X					X					
<u>Sciurus griseus</u> (gray squirrel)	X					X					
<u>Aplodontia rufa</u> (mountain beaver)	X					X					
AVES 8/											
<u>Pelecanus occidentalis californicus</u> (California brown pelican)			X						X		
<u>Falco peregrinus anatum</u> (American peregrine falcon)		X	X						X		
<u>F. mexicanus</u> (prairie falcon)	X									X	
<u>Haliaetus leucocephalus alascanus</u> (northern bald eagle)	X			X							X
<u>Strix occidentalis caurina</u> (northern spotted owl)	X			X						X	
<u>Histrionicus histrionicus</u> harlequin duck	X				X						
<u>Accipiter gentilis articapillus</u> (goshawk)	X					X					
<u>A. striatus velox</u> (sharp-shinned hawk)	X				X						
<u>Canachites canadensis franklinii</u> (Franklin spruce grouse)		X			X						
<u>Strix nebulosa</u> (great grey owl)					X						
<u>Dryocopus pileatus picinus</u> (pileated woodpecker)	X				X						
<u>Pandion haliaetus</u> (osprey)	X					X					X
<u>Falco columbaris bendirei</u> (w. pigeon hawk)					X						
<u>Accipiter tridactylus</u> (Alaskan w. three-toed woodpecker)	X										
<u>Colaptes auratus</u> (white-headed)											

SPECIES NAME	Observed	Expected to Occur	OREGON STATE CLASSIFICATION					NATIONAL CLASSIFICATION	
			2/ Endangered	3/ Threatened	4/ Status Undetermined	5/ Include (USFS only)	6/ Perennial	Endangered	Threatened	Status Undetermined
AMPHIBIANS									
Rana pretiosa (western spotted frog)	X			X					
Ascaphus truei (tailed frog)	X			X					
Batrachoseps wrighti (Oregon slender salamander)	X			X					
Plethodon larselli (Larch Mountain salamander)		X			X				X
Dicamptodon copei (Cope's salamander)	X				X				
MOLLUSKA									
Ostrea lurida (native oyster)		X	X						

1/ Resulting from a recent task force composed of persons from the U.S. Bureau of Sport Fisheries and Wildlife, U.S. Forest Service, Bureau of Land Management, Oregon Wildlife Commission and Agricultural Experiment Station at Oregon State University, Corvallis, Oregon--agreement was reached on a uniform classification for the Oregon wildlife species present in this report.

This classification supersedes the past and confusing classification where a single wildlife species may have several different classifications, e.g. the Great Grey Owl was classified as rare by the Oregon Wildlife Commission, endangered by Oregon State University Agricultural Experiment Station, unique by the U.S. Forest Service and not considered at all by the Bureau of Sports Fisheries and Wildlife. The only exception to the new classification is in the term of "unique," which is retained by the U.S. Forest Service. Also, the term "rare" has been deleted by all agencies.

- 2/ Endangered: Any species which is in danger of extinction throughout all or a significant portion of its range.
- 3/ Threatened: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- 4/ Status Undetermined: Insufficient data currently available to reliably assess the status of the species. However, preliminary information indicates that the species may be threatened or endangered throughout all or a significant portion of its range in Oregon.
- 5/ Unique: A species or subspecies not classified as endangered or threatened but which has considerable scientific or national interest. Usually, special protection or management measures are needed to protect this species.
- 6/ Peripheral: A peripheral species or subspecies is one whose occurrence in an area is at the edge of its natural range and is living in a stress situation. Special attention is necessary to assure protection of this animal.
- 7/ Classified by and published in:
Threatened Wildlife of the United States, compiled by the Office of Endangered Species and International Bureau of Sport Fisheries and Wildlife, U.S. Department of Interior. Resource Pub. 114, March 1973:289 pp.
- 8/ Trinominal for avifauna derived from Checklist of North American Birds, American Ornithologists' Union, 5th ed. 1957:691 pp.

GLOSSARY

- Biomass:** The living weight supported by a given ecosystem or area. This calculation permits comparison between any species and allows relative carrying capacities to be considered.
- Community:** All Biological Populations within the area in question.
- Cruising Radius:** See Home Range.
- Ecosystem:** The interaction of biotic (biotic community) and abiotic elements within a given area. This term is synonymous with habitat.
- Ecotone:** The transition zone or edge where two or more plant communities come together.
- Endemic:** Confined to or occurring nowhere except in the place in question.
- Habitat:** See Ecosystem.
- Home Range:** The normal distance a given species can travel or move in a given time, in this case a 24 hour period. It also refers to an area the animal is familiar with.
- Niche:** While the habitat of an animal indicates where it lives, the niche represents the position or status of that animal in the habitat.
- Peripheral:** At the edge of its natural range of habitat and is living in a stress situation.
- Sere:** Seral stage: Ecological succession is the orderly process of community change. It is the sequence of communities which replace one another in a given area. The whole series of communities which develop in a given area are called the sere. The relatively transitory communities are called seral stages or seral communities with the final or mature communities being the climax community.
- Snag:** Any standing dead tree or portion of the stem of a standing dead tree with a minimum DBH of 10" and maximum height of 10'.
- Survival:** A term referring to an animal population which is actively living, growing and reproducing in a given area.
- Whip:** Any living or dead tree equal to or greater than 2" DBH.

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APPENDIX A

PLANT COMMUNITY COMPOSITION

The following array of plants represents some of the plant community types visited by the Land Use Planning Field Team during the summer of 1973. It is important to remember this array is not all of the vegetative communities in the timbered zones of the Planning Unit, nor is it necessarily representative of the major or dominant vegetative communities. It does represent vegetative communities which appear more than once within the different areas where timber stand exams were taken. It also includes those plant species which occurred four or more times out of five stops (exams) within a single timber type or stratum visited by the inventory team. (Planning Unit maps showing the exact location of timber stands examined are on file with the Mt. Hood National Forest Land Use Planning Division).

The intent of this chart is not to present a complete list of all vegetative species and/or plant communities in the Planning Unit, but to demonstrate the tremendous vegetative diversity commonly observed.

DOMINANT OVERSTORY*

DOMINANT GROUND COVER*

1000 - 2000' elev.
(West Side)

Pseudotsuga menziesi (Psme)
Alnus rubra (Alru)
Acer macrophyllum (Acma)

Holodiscus discolor (Hodi)
Corylus cornuta (Coco)
Rubus sp.
Acer circinatum (Acci)
Sambucus glauca (Sagl)
Pteridium (Pter)
Vancouveria hexandria (Vahe)

Psme
Alru
Acma
Tsuga heterophylla (Tshe)

Berberis nervosa (Bene)
Polystichum sp.
Oxalis
Pter

Psme
Thuja plicata (Thpl)
Tshe

Acci
Rubus sp.
Vaccinium ovatum (Vaov)
Bene
Galtheria shallon (Gash)
Pter
Poly
Linnaea borealis (Libo)

Psme
Tshe
Thpl

Acci
Vaov
Pter

	Oxalis Vahe Poly
Psme Tshe Thpl Alru	Gash Bene Acci Poly Libo
2000 - 3000' elev. (West Side)	
<u>Alnus rubra</u> (Alru) Tshe <u>Populus trichocarpa</u> (Potr)	Acci <u>Rubus vitifolius</u> (Ruvi) Poly <u>Montia sibirica</u> (Mosi)
Psme	Acci Vaov Gash Bene <u>Rubus</u> sp. Pter
Psme Tshe Thpl	<u>Smilacina stellata</u> (Smst) <u>Cornus canadensis</u> (Coca) <u>Oxalis</u> Pter
Psme Tshe	Acci <u>Rubus</u> sp. Bene Gash
Psme Tshe	Acci Gash <u>Rhododendron macrophyllum</u> (Rhma) Bene <u>Vaccinium parvifolium</u> (Vapa)
Psme Tshe	<u>Opopanax horridum</u> (Opho) Vaov <u>Oxalis</u> <u>Montia</u> sp. <u>Lupinus</u> sp. Poly

APPENDIX A

PLANT COMMUNITY COMPOSITION

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DOMINANT OVERSTORY*

DOMINANT GROUND COVER*

1000 - 2000' elev.
(West Side)

Pseudotsuga menziesi (Psme)
Alnus rubra (Alru)
Acer macrophyllum (Acma)

Holodiscus discolor (Hodi)
Corylus cornuta (Coco)
Rubus sp.
Acer circinatum (Acci)
Sambucus glauca (Sagl)
Pteridium (Pter)
Vancouveria hexandria (Vahe)

Psme
Alru
Acma
Tsuga heterophylla (Tshe)

Berberis nervosa (Bene)
Polystichum sp.
Oxalis
Pter

Psme
Thuja plicata (Thpl)
Tshe

Acci
Rubus sp.
Vaccinium ovatum (Vaov)
Bene
Galtheria shallon (Gash)
Pter
Poly
Linnaea borealis (Libo)

Psme
Tshe
Thpl

Acci
Vaov
Pter

	Oxalis Vahe Poly
Psme Tshe Thpl Alru	Gash Bene Acci Poly Libo

2000 - 3000' elev.
(West Side)

<u>Alnus rubra</u> (Alru)	Acci
Tshe	<u>Rubus vitifolius</u> (Ruvi)
<u>Populus trichocarpa</u> (Potr)	Poly
	<u>Montia sibirica</u> (Mosi)

Psme	Acci
	Vaov
	Gash
	Bene
	<u>Rubus</u> sp.
	Pter

Psme	<u>Smilacina stellata</u> (Smst)
Tshe	<u>Cornus canadensis</u> (Coca)
Thpl	<u>Oxalis</u>
	Pter

Psme	Acci
Tshe	<u>Rubus</u> sp.
	Bene
	Gash

Psme	Acci
Tshe	Gash
	<u>Rhododendron macrophyllum</u> (Rhma)
	Bene
	<u>Vaccinium parviflimum</u> (Vapa)

Psme	<u>Opopanax horridum</u> (Opho)
Tshe	Vaov
	<u>Oxalis</u>
	<u>Montia</u> sp.
	<u>Lupinus</u> sp.
	Poly

Psme <u>Cornus nuttallii</u> (Conu) Tshe	Gash Bene Rhma <u>Rubus</u> sp. Acci Vaov <u>Montia</u> sp.
Psme Tshe	Gash <u>Castanopsis chrysophylla</u> (Cach) Libo
Psme <u>Pinus contorta</u> (Pico) Tshe	Gash Rhma Pter <u>Lupinus</u> sp. Libo
Tshe Thpl	Gash Rhma Acci Bene <u>Chimaphila umbellata</u> (Chum)
Psme Tshe	Bene Acci Rhma Gash <u>Rubus</u> sp. Vaov <u>Epilobium angustifolium</u> (Epan) Poly
Alru Tshe	Acci Ruvi Poly Mosi
Abam <u>Abies amabilis</u> (Abam)	Vaov <u>Rubus</u> sp. <u>Clintonia uniflora</u> (Clun)

3000 - 4000' elev.
(West Side)

Abam Tshe	Vaov Smst
Psme Tshe	Bene Acci Rhma
Psme Tshe	Acci Bene Rhma Vaov <u>Rubus spectabilis</u> (Rusp) <u>Holodiscus discolor</u> (Hodi) Gash
Abam Tshe	Vaov Smst
Psme Tshe	Acci Bene <u>Rubus</u> sp. <u>Rosa gymnocarpu</u> (Rogy) Mosi Vahe Libo Coca Pter
Psme Tshe	Acci Bene Rhma Vaov Rusp Hodi Cach Gash Pter <u>Xerophyllum tenax</u> (Xete) Poly Libo
Psme	Vaov Acci Bene Rhma Rusp

Psme <u>Cornus nuttallii</u> (Conu) Tshe	Gash Bene Rhma <u>Rubus</u> sp. Acci Vaov <u>Montia</u> sp.
Psme Tshe	Gash <u>Castanopsis chrysophylla</u> (Cach) Libo
Psme <u>Pinus contorta</u> (Pico) Tshe	Gash Rhma Pter <u>Lupinus</u> sp. Libo
Tshe Thpl	Gash Rhma Acci Bene <u>Chimaphila umbellata</u> (Chum)
Psme Tshe	Bene Acci Rhma Gash <u>Rubus</u> sp. Vaov <u>Epilobium angustifolium</u> (Epan) Poly
Alru Tshe	Acci Ruvi Poly Mosi
Abam <u>Abies amabilis</u> (Abam)	Vaov <u>Rubus</u> sp. <u>Clintonia uniflora</u> (Clun)

3000 - 4000' elev.
(West Side)

Abam Tshe	Vaov Smst
Psme Tshe	Bene Acci Rhma
Psme Tshe	Acci Bene Rhma Vaov <u>Rubus spectabilis</u> (Rusp) <u>Holodiscus discolor</u> (Hodi) Gash
Abam Tshe	Vaov Smst
Psme Tshe	Acci Bene <u>Rubus</u> sp. <u>Rosa gymnocarpu</u> (Rogy) Mosi Vahe Libo Coca Pter
Psme Tshe	Acci Bene Rhma Vaov Rusp Hodi Cach Gash Pter <u>Xerophyllum tenax</u> (Xete) Poly Libo
Psme	Vaov Acci Bene Rhma Rusp

Abam Psme	Vaov <u>Fragaria vesca</u> (Frve) Clun <u>Pedicularis racemosa</u> (Pera) Coca
Abam Psme Tshe	Vaov Rhma
Abam Psme Thpl	Rhma Bene Xete Coca
Psme Thpl Tshe	Vaov Rhma Cach Xete
Abam	Rhma <u>Vaccinium</u> sp. Libo Xete
Abam Tshe	Rhma Vaov Coca Xete Clun
Abam Tshe Thpl	<u>Vaccinium membranaceum</u> (Vame) Coca Libo
Psme Pico <u>Pinus monticola</u> (Pimo) Thpl Tshe	<u>Salix</u> sp. Acci <u>Vaccinium</u> sp. Rogy Cach Epan Xete Coca

Abam
Picea engelmanni (Pien)
Tsuga mertensiana (Tsme)

Vaov

Abies grandis (Abgr)
Psme

Pachystima myrsinites (Pamy)
Rosa sp.
Rubus sp.

3000 - 4000' elev.
(East Side)

Abgr
Larix occidentalis (Laoc)
Psme
Tshe

Rubus ursinus (Ruur)
Rosa sp.
Pamy
Chum

Abgr
Psme

Pamy
Rosa sp.
Ruur
Symphoricarpos sp.

Psme
Thpl
Tshe

Pamy
Rosa sp.
Vaccinium sp.
Libo
Goodyera oblongifolia (Goob)

Abgr
Pimo
Psme
Thpl
Tshe

Bene
Cach
Ruur
Pamy
Chum
Libo
Goob

Salix sp.
Psme

Bene
Symphoricarpos sp.
Ruur
Acer glabrum (Acgl)
Hodi
Frve
Pter
Grass sp.

4000 - 5000' elev.
(West Side)

Abam	Rhma
Tshe	Xete
<hr/>	
Abam	<u>Vaccinium</u> sp.
Tsme	<u>Rubus</u> sp.
	Xete
	Clun
<hr/>	
Abam	Vame
Psme	Coca
Tshe	Clun
	Xete
<hr/>	
<u>Abes concolor</u> (Abco)	Rhma
Abgr	<u>Vaccinium</u> sp.
<u>Abes procera</u> (Abpr)	<u>Rubus</u> sp.
Pico	Xete
Psme	Coca
	<u>Pyrola</u> sp.
<hr/>	
<u>Abies lasiocarpa</u> (Abia)	<u>Vaccinium</u> sp.
Abpr	<u>Lupinus</u> sp.
	Xete
Tsme	
<hr/>	
Abam	Vame
Abia	Xete
Abpr	<u>Lupinus</u> sp.
Tsme	
<hr/>	
Pico	Rhma
Thpl	Gash
Psme	<u>Vaccinium</u> sp.
	Pter
	<u>Anaphalis margaritacea</u> (Anma)
	<u>Rubus</u> sp.
<hr/>	
Abam	Cach
Abia	Hodi
Abpr	Acci
Alru	Xete
Pico	Coca
Pimo	Pter

Psme

Epan
Lupinus sp.
Anma
Frve

4000 - 5000' elev.
(East Side)

Abam
Psme
Tsme

Acci
Clun
Achlys triphylla (Actr)
Smst

Abam
Abpr

Vame
Actr
Clun

Abam
Abpr
Tsme

Vaov
Actr
Clun
Polemonium californicum (Poca)

Abam
Abia
Tsme

Rubus lasiococcus (Rula)
Lupinus sp.

Psme
Tsme

Vaccinium sp.

Alba
Laoc
Pico
Pien

Pamy

Abam
Abgr
Tsme

Vame
Xete
Clun

Abam
Abgr
Psme
Tsme

Vame
Chum
Anemone sp.
Clun
Xete
Actr

7500 ' elev.
(East Side)

Abam	<u>Vaccinium</u> sp.
Tsme	Rula
	Actr
	Goob
	Clun

Abam	Rula
Tsme	<u>Lupinus</u> sp.
	Clun
	Actr

Ab1a	Xete
Pico	<u>Lupinus</u> sp.
Pien	
Tsme	

Abam	<u>Vaccinium</u> sp.
Tsme	<u>Rubus</u> sp.
	Goob

Abgr	<u>Chimaphila menziesii</u>
Psme	

Natural Openings (All Elevations; East and West Side)

Meadows: Flora consisting of willow, cottonwood, lodgepole, alder mixtures of these species plus:

Moist Meadow: Standing water part of the year, dominant flora: Sedge.

Wet Meadow: Many boggy-like or wet areas year round; dominant flora is sedge with possible mixtures of spirea, rushes. If a pond community is associated with this meadow ecosystem, buckbean (Thermopsis) is commonly present.

Brush: Spirea sp. in areas undisturbed by man. These are usually small in size (rarely exceeding four acres). These ecosystems are often interspersed with conifer ecosystems and form only one ecotone.

Acer circinatum and/or Alnus rubra often form stringer communities along rock outcrops and riparian situations.

Corylus cornuta (Hazel)
Castanopsis chrysophylla (Chinka pin)
Artostaphylos sp. (Manzanita)

Often mixed with other shrub and herb species--these brushy openings are usually one acre or less in size. These communities rarely create more than two ecotones.

Rock Outcrops: (Talus slopes, cliffs, boulder fields and boulder habitat - riparian).

Water: (Lakes, ponds and streams with associated riparian ecosystems).

Hydrosere:

Bog (Bg) - A hydrosere usually developed in glaciated areas where precipitation is high, evaporation fairly low with poor drainage usually due to a glacial basin and porous lands. Usually deficient aeration, poor bacterial and fungal flora with a low pH factor (acidic). Peat deposits - often floating with sedge or Sphagnum mats and shrubs. Hummocks usually present. Conifer trees usually surrounding or dispersed through the hydrosere.

Quaking-bog (Q-Bg) - Similar to above, except soils are so loosely consolidated and contain so much water that pressure at one point produces shaking and trembling for a considerable distance around the point of impact.

Marsh (Mrh) - A treeless hydrosere, often developed in shallow ponds, depressions or river margins. Grasses, rushes and sedges compose the dominant vegetation - monocotyledons predominant. May be seasonally ponded.

Swamp (Swp) - A hydrosere saturated but usually not covered with water. May be located in sluggish streams or floodplains of rivers. Dominated with trees (usually but not necessarily deciduous) plus moss and shrubs. Drainage better than bogs with soil more compacted and less acidic. May succeed a marsh ecosystem.

Modified Wet Areas (Mod-w) - Hydrosere areas which have been modified by man and do not fit one of the above ecological classifications.

Alpine Life Zone: Predominantly treeless expanse. Usually above 5500 foot elevation on the Mt. Hood National Forest. This ecosystem is maintained as a result of adverse climatic conditions and unstable soils.

* Snowfields: Permanent snow and ice fields usually confined to the alpine life zone.

APPENDIX B

Harassment Rating Key

Harassment Element	Harassment Rating
Residential, \geq 5 units/sq mile	5
Residential, $<$ 5 units/sq mile	3-4
Roaded motorized use, year around	3-4
Roaded motorized use, seasonal	2-3
Non-roaded motorized use, year around	4-5
Non-roaded motorized use, seasonal	2-4
Trail use, \geq 1500/year*	4-5
Trail use, \geq 300/year	3-4
Trail use, \geq 30/year	2-3
Trail use, $<$ 30/year	1
Free ranging dogs, \geq 5/observer/visit	5
Free ranging dogs, \geq 5/observer/visit	4
Free ranging dogs, \geq 5/observer/year	3
Free ranging dogs, \geq 5/observer/year	2
X-C hiking or skiing, \geq 1500/year*	5
X-C hiking or skiing, \geq 300/year	4
X-C hiking or skiing, \geq 30/year	3
X-C hiking or skiing, $<$ 30/year	1

Harassment level (summation of harassment ratings)

High	19+
Moderate	10 - 18
Low	0 - 9

* Ranges compiled from U. S. Forest Service,
Mt. Hood National Forest Recreation
Information Management Surveys - 1973-1975.

APPENDIX C

MANAGEMENT REGIMES CONSIDERED THAT AFFECT WILDLIFE SPECIES DIVERSITY

Value****	Ecologic Elements	***											
		W-1	W-3	W-5	W-7	D-1	D-2	D-3	T-1	T-2	T-3	A-1	A-2
5	a) Ecotonal Diversity (Natural)	1	1	2	4	5	4	4	1	3	4	4	4
3	b) Vertical Vegetative Layering	1	1	2	4	5	5	5	1	4	4	4	5
4	c) Snag Habitat (Whips Included)*	1	1	1	3	4	4	4	3	4	5	4	5
2	d) Harassment Level (See Appendix B)	1	1	2	5	5	4	4	2	3	3	3	4
Species Diversity Impact Factor** (Σ a,b,c,d)													
		4	4	7	16	19	17	17	7	14	16	15	18
Weighted totals													
		14	14	24	54	66	59	59	24	49	58	54	63

* See Glossary

** Impact on species diversity

3 _____ 15
Low High

*** See Code Appendage

**** Order of importance - in terms of maintaining species diversity

1 = Trampling and removal of vegetation results in minor impacts to areas of concentrated use, e.g., trails, popular camp sites, view points, etc. With proper rest-rotation, vegetative elements (except snag habitat) may completely recover. Any vegetative loss should be insignificant in terms of animal population survival.*

Harassment is low (see harassment section in Appendix B). Any effect on wildlife population survival rates is insignificant.

2 = Similar to #1, though vegetative impacts are slightly greater due to a greater number of people use.

Harassment is slightly higher, though still considered as low (see harassment section in Appendix B).

3 = Vegetative damage and removal may completely alter ecotone types and vertical vegetational layering in localized areas around shelters, low standard roads, parking pull-offs, and crop lands. Though use is mostly seasonal, soil compaction and possible erosion plus an increase in people use, (except for areas where group selection timber harvest may be suitable, or similar activities have not exceeded six acres) damage to natural plant communities should be considered as permanent, even though natural vegetative variety might recover given an extended period of time.

Harassment should be considered as moderate (see harassment section in Appendix B).

Loss of snag habitat is not great, i.e., snags have not been removed along roads, parking areas, trails or structures, nor are they necessarily being salvaged for wood fiber, though some limited removal for safety reasons may occur. Some natural snag habitat replacement occurs.

4 = Vegetative damage and removal has altered ecotonal areas and vertical vegetative layering.

Use may be annual or seasonal.

Damage to vegetational variety is permanent in at least some of the area, i.e., paved roads, cemented or highly compacted sites.

Due mainly to access ease and increased use levels in surrounding areas, the people use (recreational and commercial) is greater than in 1 through 3 above.

Harassment level may vary from moderate to high (see harassment section in Appendix B).

The loss of snag habitat is critical due to removal for wood fiber, state safety regulations and/or fire policies. Also, natural snag habitat replacement is very low.

If timber management occurs, it is less than full yield, though the policy for converting old growth (200+ years) to second growth holds.

5 = Similar to #4 above except that use is on a year around basis.

Harassment level should be considered as high (see harassment section Appendix B).

Loss of snag habitat is critical and complete. No natural replacement of snag habitat.

If timber harvest occurs, it is full yield.

* See Glossary

Recreation:

- W1 - Management as a designated wilderness or wilderness study area.
- W3 - Dispersed recreation, retention of primitive conditions, provisions for trails but not trail camps or shelters.
- W5 - Same as W3, except that trail camps and shelters could be provided.
- W7 - Developed recreation, oriented around roads and car camps.

Development:

- D1 - Residential or commercial development up to eight dwelling units or equivalent² per acre, requiring tertiary treatment of sewage.
- D2 - Residential development of two or less housing units per acre, requiring tertiary treatment of sewage.
- D3 - Same as D2, except septic systems would be used.

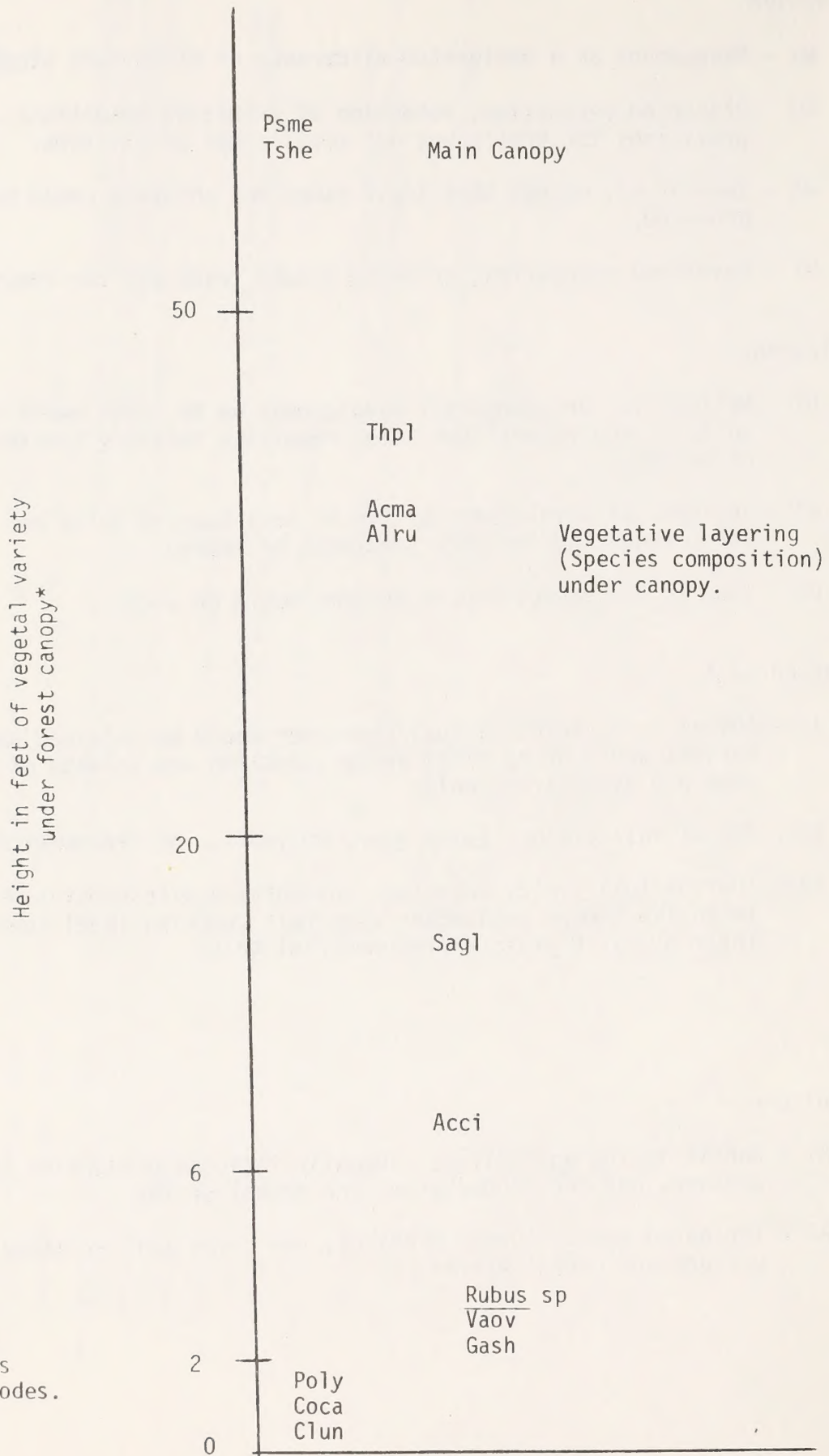
Timber harvest:

- T1 - 50% of full yield. Visual character would be retained and harvest would be by small group selection and salvage of dead and dying trees only.
- T2 - 70% of full yield. Enter every 20 years. No precommercial thin.
- T3 - 100% of full yield, more than one cutting within rotation age. Intensive timber management with full stocking level control. Enter every 10 years w/precommercial thin.

Agriculture:

- A1 - Non-irrigated agriculture. Usually includes production of pasture, hay and fodder crops and cereal grains.
- A2 - Irrigated agriculture - orchards, row crops and irrigated pasture and cereal grains.

APPENDIX D
VEGETATIVE LAYERING WITHIN FOREST CANOPY



* See Appendix A
for plant species
represented by codes.

EXHIBIT L

ENVIRONMENTAL ASSESSMENTS - SOILS

1. General/Relative Impact of all Proposed Activities(irrespective of alternative)

Land Categories	Impact on Soil Resources		
	Relative Level	Index Rating 1/	Associated Impacts
1, 2 & 3	low	2	Slight to moderate erosion from trail and campsite development
4**	high to severe	8-10	High erosion during construction, impervious surfacing, topsoil removal & compaction from roads, utilities, and building siting. Drainfields.
5	low to moderate	3-6	Erosion from roads, soil compaction from logging systems and developed recreation sites (less category #4)
6*	moderate	6	Erosion from roads, soil compaction from logging systems and developed recreation sites (less than category #5)
7	low	3	Erosion from farm operations; soil compaction around stock watering areas.
8, 9 & 10**	high to severe	8-10	High erosion during construction, impervious surfacing, topsoil removal and compaction from roads, utilities, and building siting. Drainfields.

* Degree of soil damage, depending upon logging system type
 2% helicopter and balloon
 7% cable and suspended
 28% tractor-haul

** Degree of soil damage, depending upon development intensity:

Areas Impacted

Covered Surfaces

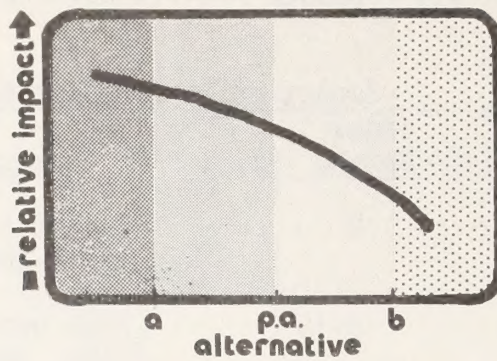
0-5%
 5-33%
 33-100%

Construction Disturbance

0-10% Rural housing & dispersed recreation
 10-50% Low density housing & developed recreation
 50-100% Resort, commercial etc.

1/ Index rating is a measure of the degree of impact on the soils resource on a scale of 0-10. 0 = lowest impact, 10 = highest

2. Aggregate Impact on Soil Resources,



Note: Relative impact of each activity weighted by amount of acres committed.

EXHIBIT M

Mass Wasting Effects and Potential Hazards - Geology Assessment

Mass wasting (weathering, disintegration and transport) of the geologic profile is a naturally occurring and constant process. It proceeds with varying rates and mechanisms, depending on rock type and condition and the transport agent involved. These processes may be accelerated (or retarded in the case of remedial treatment) by cultural activities such as road construction, timber harvest and general construction requiring excavation and slope loading. The hazard related to these processes depends upon cultural proximity and frequency of exposure in the case of land movement and on stream use in relation to turbidity, bedload and glacial dams. Timber production is affected regardless of exposure frequency in that the damage is to the soil resource and hence, regeneration capability.

Rockfalls. This process occurs through erosion of steep lava cliffs and results in the formation of talus deposits below. The hazard results from falling and rolling rock or debutting of talus slopes by road or general construction.

Landslides. This form of mass wasting occurs most frequently in the areas underlain by volcanic breccias and sediments or areas of thick, poorly drained soil profiles or soils developed on steep bedrock surfaces. Hazards are destruction of life and property downslope, loss of the soil profile and sediment contribution to adjacent stream drainages.

Rock and Ice Avalanches. Avalanching occurs most frequently on the steep cliffs and glaciers of Mt. Hood proper and the cliff areas formed by the resident lava flow rock units. The hazards are mostly to recreationists and recreation features such as trails, winter sports areas and high mountain roads.

Glacial Dams. This form of mass wasting occurs when glacier under-drainages are restricted by moraines or ice falls causing water impoundment beneath or along the glacier terminus. Torrential runoff occurs when the restriction breaches and causes severe stream and streamside damage below until the water slug dissipates. Streams most susceptible are those draining major glaciers on Mt. Hood. The hazard is to stream uses such as irrigation diversions, bridges and recreation structures.

Stream Bedload. Under extreme or rapid runoff, conditions on the bedload transport of streams on the flanks of Mt. Hood reaches slurry conditions. Material deposited under normal runoff conditions is multiplied and stream capacity is exceeded. Characteristic streams where this process frequently occurs are the White and Sandy River drainages. Damages are to bridges and streamside facilities.

Streambank Failure. Significant reaches of streambank are composed of poorly to uncemented gravels, sands and silts. These conditions are most common in the areas of alluvial terrace, glacial outwash and recent alluvial deposits. These materials have very little resistance to erosion by high velocity stream discharge. During periods of peak stream discharge, significant bank failure and retreat occurs. This hazard effects streamside roads, homes, businesses and recreation areas. These conditions are most prevalent along the lower Sandy and Zigzag drainage areas.

Stream Turbidity. This process occurs in conjunction with one or more of the above mass wasting effects. It is however, most severe when associated with landslide activity and related streambank failure. These mass wasting processes usually are the result of failures of material containing a high percentage of clay sized material. This material is transported to the stream by the failure and massive amounts of colodial materials that are put into suspension. Results are degradation of downstream water quality, damage to the aquatic life habitat and excessive maintenance and repair caused by the abrasive action in irrigation and other water transport systems.

Geothermal Resources

As defined in the Geothermal Steam Act of 1970, geothermal resources consist of "all products of geothermal processes embracing indigenous steam, hot water and hot brines; steam and other gases, hot water and hot brines resulting from water, gas and other fluids artificially introduced into geothermal formations; heat or other associated energy found in geothermal formations; and any by-product derived therefrom".

Rules and Regulations covering the exploration for and development of geothermal resources are outlined in the Geothermal Steam Act of 1970 (30 U.S.C. 1001-1025); in the Federal Register under Title 30, Chapter II (F.R. Vol. 38, No. 245, December 21, 1973) and Title 43, Chapter II (38 F.R. 35082, December 21, 1973); the Geothermal Resource Operational Orders as released through the United States Geological Survey; U.S. Geothermal Energy Research, Development and Demonstration Act of 1974 (PL 93-410); State of Oregon Administrative Rules - Compilation Sections 20-005 through 20-170, 1972; U.S. Forest Service Manual Supplement, Title 2800.4, Section 1 through 6, 1974; Environmental Statement for the Geothermal Leasing Program, U.S. Department of the Interior, Fol. 1-4, 1973.

Existing regulations cover leasing, surface changes, payments, bonding, surface management requirements, land availability, drilling and testing, surface occupancy, waste disposal, operations, production measurement, violation procedures, and others. Potential developers are required to submit a plan of operation "prior to commencing any operations on the leased lands or on any lands covered by a unit or cooperative agreement". This plan must be approved by the appropriate land management agency. The plan must include such things as well locations (including support facilities), planned access roads, sources of water and building materials, campsites or support buildings, topographic features, wash disposal areas, environmental protection measures, and others. Alterations in the plan of operations must have approval of the land management agency. Significant alterations in the plan of operations may necessitate complete reevaluation of the proposed project.

Tectonic Hazards

The West Coast of North America is situated in the Circum-Pacific ring of fire, a band which encircles the Pacific Basin and which is characterized by the greatest volcanic and seismic activity in the world. The crustal structure and tectonic behavior of the northwestern United States are very complex. With the limited knowledge available to us at the present time, it is not possible to predict future tectonic activity with any degree of precision.

Volcanism

The bedrock of the Western Cascades in northern Oregon represents the cumulative result of volcanism over a period of at least 40 million years. Although little is known about the older unit, it is evident that in the past 7 million years more than 100 cubic miles of rock has been erupted in the Mount Hood area alone (Wise, 1969). Almost half that volume is represented by Mount Hood volcano and neighboring vents of Quaternary (0 to 2 million years) age. In the Bull Run drainage young vents include west Ashoff Butte, a cone at Wiker Plain, and an intracanyon accumulation of flow rock at the west end of Bull Run Lake.

A dacite plug was extruded from the vent of Mount Hood volcano as little as 2,000 years ago (Wise, 1968). Historic records of activity on Mount Hood are poorly documented and subject to debate. The August 17, 1859 edition of the weekly Oregonian comments on activity at that time, and in 1865 a night guard at Fort Vancouver reported seeing and hearing an eruption on the mountain (Folsom, 1970). Fumaroles and hot spots near the crest are active at the present time.

The extreme glacial dissection of Mount Hood indicates that the cone has not been significantly active for at least 10,000 years. Such a time span is little in the life of a large volcano, however. Although there is comfort in the great number of years involved, that time span does not eliminate the possibility of future volcanic activity in the area (Figure 81).

Mount St. Helens, located 60 miles to the north, was active nine times between 1831 and 1857. The eruption of 1831 spread a layer of ash as far north as Mount Rainier; eruptions of 1842 continued during most of the year and spread ash as far east as The Dalles (Folsom, 1970). Numerous flows and eruptions during the past few thousand years in the Cascades to the south are described by Taylor (1965).

To assess the probability of further activity on Mount Hood, personnel of the U.S. Geological Survey have begun geophysical monitoring on a limited basis. Personnel of the Oregon Department of Geology and Mineral Industries have made preliminary arrangements to receive infrared imagery of the vent area on a periodic basis. Follow-up seismic studies may be warranted in the future.

A determination of the consequences of an eruption of Mount Hood requires an estimation of the type of eruption that might occur. McBirney (1968) groups the Cascades volcanoes into two types. The divergent volcanoes, such as Mount Mazama (Crater Lake) are composed largely of two distinct rock types, rhyolite and basalt, and are characterized in their later stages by violent eruptions. The convergent volcanoes are composed primarily of one rock type of intermediate composition (e.g. andesite).

Eruptions in the Mount Hood area consisted of andesite between 4 and 7 million years ago and andesite with minor basalt between 2 and 4 million years ago. Mount Hood volcano, erupted during the last 2 million years, consists of olivine and pyroxene andesite and hornblende dacite. Possible divergence of rock types is indicated and Mount Hood is similar in some respects to Mount Mazama during its early stages of development. It would appear that lava flows, mudflows, and violent eruptions are possible. Pyroclastic rocks are common on the flanks of the mountain.

Lava flows, mudflows, and breccia eruptions would have no significant impact on the Bull Run drainage. The divide at Hiya Mountain would direct the material to the northeast or southwest away from the watershed. Extremely large mudflows proceeding down the Sandy River could conceivably destroy the aqueducts near Dodge Park, however.

The eruption of ash from Mount Hood would have a profound effect on the quality of water in the Bull Run Watershed. As the material settled into the reservoirs or onto the land, later to be washed into the reservoirs, turbidity would increase considerably. If the ash fall were sufficient to kill vegetation, water quality would be affected for years to come.

Events of low probability but high impact, such as volcanic eruptions, are difficult to incorporate into the planning process. Moreover, there is no means of controlling volcanic activity. If in future years it should be determined that volcanic activity is imminent, the only realistic course of action would be to develop a supplementary source of water for the Portland area and to draft emergency procedures for distribution if that supply were limited.

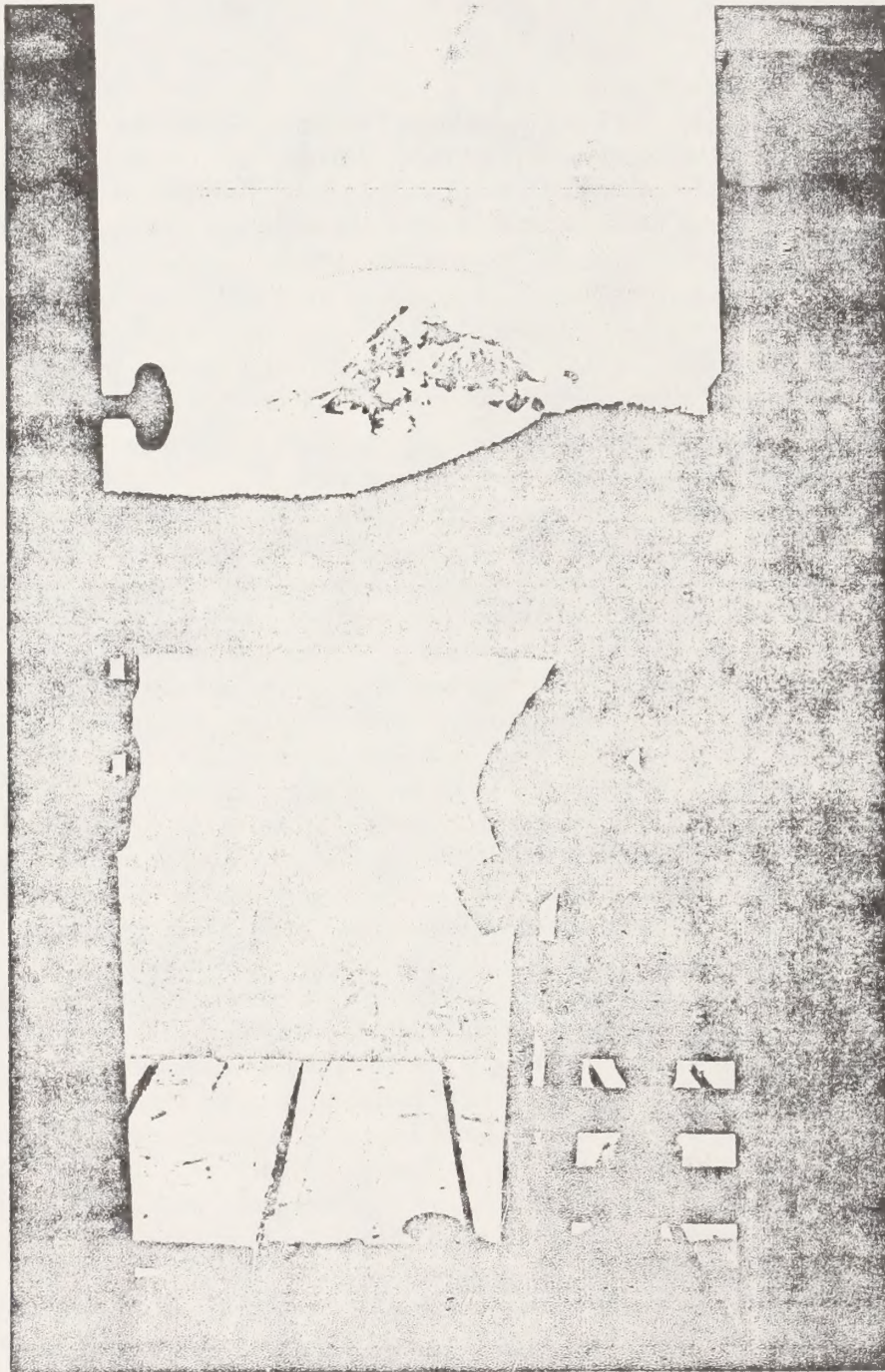


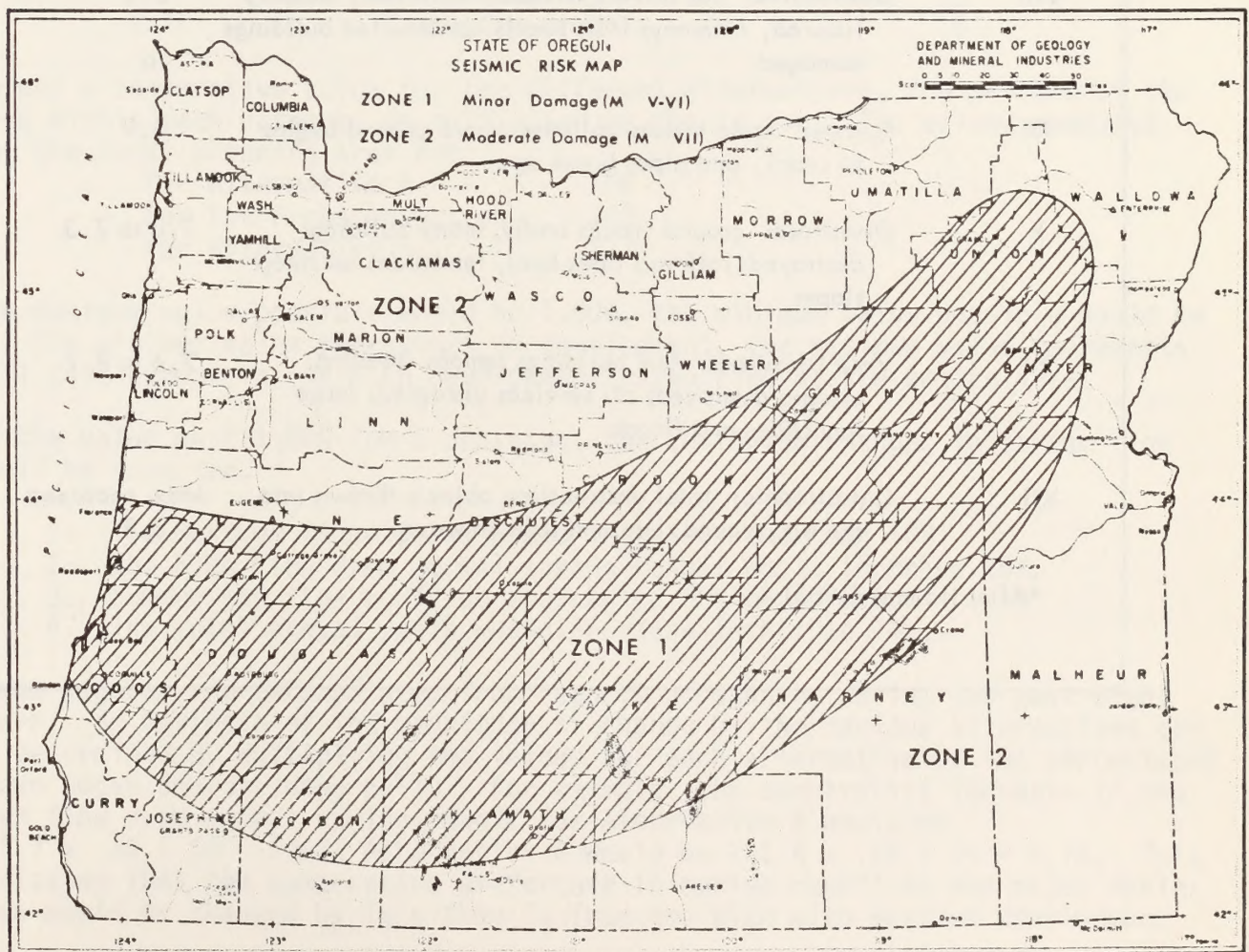
Figure 81. Placid though Mount Hood may appear from Bull Run Lake, the threat of possible future eruption is very real.

Earthquakes

The shaking of the earth's surface which accompanies the release of energy at depth is called an earthquake. Associated with the release of energy are displacements of rock along planar surfaces. The specific location of the displacement within the earth is called the focus; the geographic location above the focus is called the epicenter. Where planes of displacement intersect the ground surface they are mapped as faults. Only rarely do we actually see ground displacement associated with a particular earthquake.

A seismic risk map for the State of Oregon (Figure 82) shows the Bull Run area to lie in zone 2, an area where quakes with intensities as high as VII on the Mercalli Scale are possible (Table 6). Historic earthquakes in the Portland area vary between intensities IV and VI (Berg and Baker, 1963; Dehlinger and others, 1963; Schlicker and others, 1964; and Couch and others, 1968) and may be related to the Portland Hills Fault. Earthquake activity in The Dalles area (Berg and Baker, 1963) may be related to the Hood River Fault Zone. An earthquake of Mercalli intensity IV+ was reported at Bull Run on December 26, 1919. The quake is statistically of little significance and possibly was mislocated. There are no mappable faults in the Bull Run Watershed.

An earthquake of Mercalli intensity VII is capable of cracking walls and causing general alarm. Under unfavorable circumstances, such a quake can initiate movement on landslides which, in turn, can damage aqueducts or generate turbidity. It is recommended that the safety factors for landslide-correction projects in critical areas be calculated on the basis of a Mercalli VII earthquake, if possible.



(After Couch and Lowell, 1971)

Figure 82. Seismic risk map of Oregon.

GEOLOGIC HAZARDS OF THE BULL RUN WATERSHED

Table 6. Scale of earthquake intensities*

<u>Mercalli Intensity</u>	<u>Description of effects</u>	<u>Equivalent Richter magnitude</u>
I	Instrumental: detected only by seismographs	
II	Feeble: noticed only by sensitive people	3.5
III	Slight: like the vibrations from a passing truck; felt by people at rest, especially on upper floors	to 4.2
IV	Moderate: felt by people walking; swaying of loose objects, including standing vehicles	4.3 to
V	Rather Strong: felt generally, most sleepers awakened and bells ring	4.8
VI	Strong: trees sway and all suspended objects swing; damage by overturning and falling of loose objects	4.9 to 5.4
VII	Very Strong: general alarm; walls crack; plaster falls	5.5 to 6.1
VIII	Destructive: car drivers seriously disturbed, masonry fissured, chimneys fall; poorly constructed buildings damaged	6.2 to
IX	Ruinous: some houses collapse where ground begins to crack, and pipes break open	6.9
X	Disastrous: ground cracks badly; many buildings destroyed; railroad lines bent; landslides on steep slopes	7.0 to 7.3
XI	Very Disastrous: few buildings remain standing; bridges destroyed; all services disrupted; large landslides and floods	7.4 to 8.1
XII	Catastrophic: total destruction; objects thrown into the air; ground rises and falls in waves	Max. recorded 8.9

*After Holmes (1965)

EXHIBIT N

WATER QUALITY AND QUANTITY ASSESSMENT

Water Quantity. The rate of change from normal stream flow patterns by development is affected by the percent of the watershed developed and the severity of the development. In general terms, the larger percent of the drainage that is developed the greater the effect on stream flow will be. The same is true of severity of development. The more severe the treatment the greater the effect on stream flow will be. These two variables can be assigned factors that can be combined to show a comparative rating for different alternatives.

The following ratings have been developed for the twelve land categories:

<u>Category</u>	<u>Area Designation</u>	<u>Severity Factor</u>
1	Environmental Protection	1
2	Wilderness	0
3	Outdoor Recreation	2
4	Developed Recreation	5
5	Scenic Forests	3
6	Commercial Forests	4
7	Farm	5
8a	Rural Housing	5
b	Low Density Recreation	7
c	Medium Density	10
9-11	Community Areas	10

To get a comparative value for the different alternatives, the percent of the area within each category is multiplied by the factor. The values computed for the total planning area are:

For Alternative A	266
For the Proposed Action	242
For Alternative B	227

The maximum value possible would be 1,000, the minimum value possible would be 0. The minimum value represents no development, the maximum value represents full development in the high development categories of the entire area.

If the value were 1,000 for a drainage, the following changes in stream flow would be expected.

1. The maximum flood peaks would increase less than 10%.
2. The high flow from normal spring runoff would increase 25%.
3. Summer low flow would be reduced to 50% of normal.
4. The total annual yield would increase less than 10%.

These figures are extrapolated from reports of studies during the past eight years. An estimate of the magnitude of change by the various alternatives can be determined by multiplying the values for each alternative by the percentages shown above and dividing by 10. For example, the comparative increase in the high flow from normal spring runoff for Alternative A would be $265.7 \times .25 \div 10 = 6.6\%$; Alternative B would be $226.8 \times .25 \div 10 = 5.7\%$. This indicates that the comparative difference in spring runoff in the major drainages would be changed by less than 1% from the plan with maximum development

to the plan with minimum development. The amount of change in local drainages where development is concentrated would be considerably greater because the percent of development would be much greater.

Water Quality. Water quality is affected much the same. The area of treatment and severity of treatment are complementary in determining the degree of degradation. However, another factor which may tend to mask these influences involves the design of the activities or projects. This is as true of nonpoint* activities as with point* activities. The quality parameters associated with nonpoint sources that are most likely to be critical are turbidity (which for discussion here will include sedimentation), temperature, and nutrients.

The parameters included under the headings of chemical and bacteriological are affected more by point sources of pollution. At present there are isolated problems of both types of pollution that could be improved. There are, therefore, possibilities of improving the quality of water in the area by whatever plan is adopted.

As a general axiom, the purest water comes from areas with the least disturbance. The deviation from natural water quality is generally proportional to the amount of development or level of activity. This is similar to the relation that is developed for stream flow. However, water quality is affected more by the design of the project or the activity. With this reasoning it is possible to meet water quality standards with any of the alternatives. The general direction statement under water quality says no activity will be allowed to degrade water quality below established standards. To meet water quality standards, more elaborate and therefore more costly water protection measures are needed when more activities occur.

For example: In considering temperature increases as a result of timber harvesting. The criteria may allow a 2° F increase in temperature. If temperatures increase 1° F for every 150 feet of stream that is exposed to direct sunlight and if shade is restored naturally by revegetation years, one unit could be cut along the stream that would expose 300 feet every 10 years. However, if the cutting cycle is increased to where several units with 300 foot sections of the stream are involved within 10 years, special measures must be taken to replace or return the shade. These measures may include leaving buffer strips, erecting temporary shade structures or planting fast growing tree species that will reduce the time to reestablish shade. All these methods cost money and the more shade needed, the more the cost will be. This is only one sample, but a similar cost relation exists for other parameters. Generally the cost is not a simple proportional increase. The cost generally increases by the square of the level of activity. Thus if the level of an activity increased by three, the cost of meeting water quality standards would increase by nine. The alternatives of present plan, proposed plan, and conservative plan show an increase in timber production of 23%, 22%, and 16% respectively above present levels. Costs of water quality protection may increase by the square of the increase. This increase may show up as a reduction in the stumpage rate. It may not result in a reduction of net returns.

The increase in housing is much greater than it is for timber. The increases are 11.0, 8.6, and 5.7 times the current level. This involves an increase in the cost of water protection of 121, 74, and 30 times the current rate. Most of this increase will be borne by the residents of the area.

A discussion on the quality of water is included in the report, Mt. Hood Study "Ground Water" by H. R. Sweet and F. G. Lissner. The indication is that water quality standards are not being met in all cases under the present level of activity. This means the current cost of protecting water quality is below the level required to meet the criteria.

EXHIBIT 0
PLANT COMMUNITY SURVEY
MT. HOOD NATIONAL FOREST LANDS
1972 - N. Meador

Plant Community	Total Plots	Percent of	
		E side* Plots	W side* Plots
Western hemlock/vine maple/swordfern (<u>Tsuga heterophylla</u> / <u>Acer circinaatum</u> / <u>Polystichum munitum</u>). Associated species: Douglas-fir (<u>Pseudotsuga menziesii</u>), Oregon grape (<u>Berberis nervosa</u>), oxalis (<u>Oxalis oregana</u>). Found at elevations ranging from about 1825-1975 feet on the westside of Mt. Hood.	5.3	---	7.5
Western hemlock/vine maple/big huckleberry (<u>Vaccinium membranaceum</u>). Associated species: Douglas-fir, Oregon grape, salal (<u>Gaultheria shallon</u>), swordfern, oxalis. Found at about 2000-2150 feet virtually exclusively on the west side of Mt. Hood.	8.6	1.1	12.2
Western hemlock/rhododendron (<u>R. macrophyllum</u> /Oregon grape. Associated species: Douglas-fir, mixed shrub (huckleberry, salal, vine maple, sparsely herbaceous twinflower (<u>Linnea borealis</u>), swordfern.) Occurs at elevations of about 2670-2800 feet on relatively steep slopes on the west side of Mt. Hood.	13.9	---	19.7
Western hemlock/chinkapin (<u>Castanopsis chrysophylla</u>)/twinflower (<u>Linnea borealis</u>) Associates species: Douglas-fir, wildrose (<u>Rosa gymnocarpa</u>), boxwood (<u>Pachystima myrsinites</u>), beargrass (<u>Xerophyllum tenax</u>). Found at elevations of about 3275-3425 feet on steep slopes on both the east and west sides of Mt. Hood	15.6	25	11.7
Pacific silver fir (<u>Abies amabilis</u>), big huckleberry/bunchberry dogwood (<u>Cornus canadensis</u>). Associated species: Douglas-fir, western hemlock, rhododendron, beargrass. Occurs at elevations of about 3450-3550 feet on the west side. This is considered an intermediate type between the western hemlock types and subalpine forest.	14.6	---	20.6

Mountain hemlock (<u>Tsuga mertensiana</u>)/ Pacific silver fir/rhododendron/beargrass. Associated species: Douglas-fir, lodge- pole pine (<u>Pinus contorta</u>), big huckle- berry. Found at elevations of about 3700-3850 feet on steep midslopes pre- dominantly on the west side of Mt. Hood. This type is thought to be a result of sandy soils.	15.6	2.2	21.1
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Mountain hemlock/big huckleberry/bear- grass. Associated species: Pacific silver fir, noble fir (<u>Abies procera</u>), vanilla leaf (<u>Achlys triphylla</u>). This is the predominant subalpine forest type found at elevations of about 4575-4675 feet on both the east and west sides* of Mt. Hood.	25.9	71.6	7.0
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* "Eastside" denotes the area that drains the Hood River and its tributaries; "westside" indicates the area that drains into the Sandy River and its tributaries.

Note: Communities that are titled "western hemlock" are named so because of the large number of hemlock seedlings found in them that will eventually replace the Douglas-fir presently dominating the stands if no disturbance takes place.

The following is a partial list of plant species considered endangered or threatened that are thought to have a probability of occurrence in the Mt. Hood Planning Unit. (Smithsonian Institute 1974)

Dicentra formosa ssp oregana
Lilium washingtonianum var minus
Phlox peckii
Arnica amplexicaulis var piperi
Haplopappus hallii
Pityopus californicus
Polygonum cascadenae
Dodecatheon poeticum
Cimicifuga laciniata
Castilleja miniata ssp eleta
Microseris laciniata ssp ditlingii

EXHIBIT P

Wildlife Assessment

Environmental Impacts- The most critical impact to wildlife is the continuing increase in the human population. This will result in the loss of the outstanding wildlife diversity through harassment and destruction of natural habitat systems via an invasion of residential developments, transportation systems, plus other associated facilities and activities which accompany increasing human population.

Major ecological elements detrimentally impacted by the increasing human population are: Ecotonal diversity 1/, vertical vegetative layering 1/, hydroseres, snag habitat 1/ plus harassment 2/ which in turn affects animal population survival 1/.

Closely related to the human population increase and harassment is the increasing problem of free ranging dogs and cats. In the planning unit there are three major critical and detrimental impacts resulting from dogs and cats, i.e., 1) wildlife, 2) human health, and 3) agricultural-damage to livestock.

1. Wildlife. Impacts to wildlife are especially severe in winter and during periods of reproductive activity. Free ranging dogs (summer and winter) especially in high residential areas of the planning unit exceed five free ranging dogs observed per visit by forest visitors^{3/}. Numerous dog attacks on game and non-game animals have been reported by land managers in the planning unit. Reports of dogs killing deer in the Wildwood area have been recorded. Several studies have been conducted which reflect impacts to wildlife. For example, in 1972 it was estimated that dogs in North Carolina killed three times more deer than did bobcats.^{8/} Other research has shown that probably the most serious predator on deer is the domestic dog.^{10/} Studies have also shown there is an increase in free ranging dog activities during the daylight hours when weather conditions are cool.^{9/} Areas of the planning unit where free ranging dog occurrence is highest is usually well shaded and/or in the upper elevations where the atmospheric temperature is relatively cool. Field observations made on the planning unit and the times wildlife attacks by dogs have been recorded shows that dogs appear to be active most of the day. Hence, wildlife probably receives dog pressure, not only at night, but during the daylight hours as well.

Another impact to wildlife is the loss of genetic integrity and natural predator-prey relationships of wildlife populations. Dogs and coyotes will interbreed. Also, it has been suggested that dogs (true dogs or coyote-dog hybrids) could replace the ecological niche of coyotes, wolves, and/or fox.^{9/} With the tremendous interest and increase in wildlife viewing in Oregon and the world (see existing statement-wildlife and reference #6) a loss of part of the "wild kingdom" to hybridism and replacement is something land managers and decision makers should consider.

2. Human health. Research has pointed out a serious public health hazard from free ranging dogs and cats. This results from bites, disease transmission, and environmental pollution. It is greater than from rats.^{11/} For example, in 1973, 3500 tons of fecal material and 9.5 million gallons of urine were excreted daily by dogs in the United States.^{12/} In the city

of Portland alone, dogs generate approximately 6000 tons of fecal material in a single year.^{13/} The number of humans being bitten by free ranging dogs and cats increases annually. Also, diseases being transmitted by free ranging dogs and cats are also on the increase.

3. Agriculture-damage to livestock. As one of the goals of the planning unit was to recognize farming as a critical resource, it is important to deal with all ramifications of this goal. To relate impacts of free ranging dogs on livestock in rural America, there is a conservative five million dollars per year loss in cattle alone.

In biological concepts alone, the ramifications of impacts of free ranging dogs and cats in the planning unit are staggering. When the increasing recreational activities are considered, the problem becomes even more complex. Studies have shown that people go to the animal pounds to obtain dogs and cats for company in their recreational home, only to release them when they return to their permanent residence after vacation. ^{8/}

It is important to stress that in an area of highly concentrated recreational use, this critical impact to wildlife comes not always intentionally, but from lack of understanding, unawareness and from "loving it to death". Recreation residential areas, large group camps, and related activities often destroy the very thing which attracted the people to the area in the first place - wildlife viewing and being with nature in general.

It is also important to stress that with all management alternatives currently open to land managers, wildlife will be severely impacted, both directly and indirectly, due to the increased human population in the planning unit and the world.

Mitigative action: There are several mitigative actions which should be considered as essential if any semblance of the existing wildlife diversity is to be maintained or prolonged.

1. Hold human population increases to a minimum. This must include the development of facilities which exist to accommodate an increase in human population, and to minimize people use in general, such as found in dispersed recreation areas.
2. Provide greater protection to the fragile alpine biome.^{1/} As the natural character of this area, with its associated wildlife, cannot be retained with even the present people density, administrating agencies (though very difficult) must cooperate and coordinate management activities which will keep facility development to a minimum and reduce people visitation.
3. Free ranging dogs and cat control: If the goals of maintaining wildlife diversity and realizing that agricultural land is a critical resource, and if public health is to be maintained, dog and cat control should be an integral part of the planning process. The interagency planning process offers an outstanding tool and opportunity to establish laws, policies and guidelines to manage free ranging dogs and cats.

As land use activities continue to increase, it may not be in the best

interest of resource management or politically comfortable for land managers and county decision makers to consider environmental capacity for people without considering and taking action on free ranging dogs and cats.

4. Animal damage complaints. As the human population density increases, especially in areas such as the Mt. Hood Planning Unit, there is a proportional increase in the animal damage complaints registered with the Oregon Department of Fish and Wildlife. Most of the damage complaints are in the form of deer and elk browsing and trampling on gardens and yards, beaver gnawing on domestic shrubbery (which they usually prefer over wild plants), coyotes chasing and breeding domestic dogs, to mention a few. Animal damage problems will be resolved through cooperative efforts between the Department of Fish and Wildlife and public or private land owners.

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EXHIBIT Q

ASSESSMENT OF ALTERNATIVES - RECREATION

A. Changes from existing situation

1. Quality of recreation experiences, based on expected population user levels.

	<u>Alternative A</u>	<u>Proposed</u>	<u>Alternative B</u>
<u>Activity</u>			
Skiing (access of facilities)	Best	Intermediate	Worst
Snow activity	Worst	Best	Intermediate
Fishing	Worst	Best	Intermediate
Hunting	Worst	Intermediate	Best
Camping	Worst	Intermediate	Best
Drive for pleasure	Worst	Best	Intermediate
Scenic viewing	Worst	Intermediate	Best
Water sports	-----	No differences	-----
Mountaineering	Worst	Intermediate	Best
Resort	Intermediate	Best	Worst
Golf	Intermediate	Best	Worst
Picnicking	Intermediate	Best	Worst

2. Relative visitor day use expected 1/

Skiing	Highest	Intermediate	Lowest
Snow activities	Lowest	Highest	Intermediate
Fishing	Lowest	Intermediate	Highest
Hunting	Lowest	Intermediate	Highest
Camping	Highest	Intermediate	Lowest
Drive for pleasure	Intermediate	Highest	Lowest
Scenic viewing	Lowest	Intermediate	Highest
Water sports	Highest	Intermediate	Lowest
Mountaineering	Highest	Intermediate	Lowest
Resort	Highest	Intermediate	Lowest
Golf	Intermediate	Highest	Lowest
Picnicking	Intermediate	Highest	Lowest

3. Proportion of Recreation Uses

All of the alternatives provide a heavy proportion of day-use/overnight-use opportunities, because suitable facilities for camping are not provided.

The highest proportion of overnight facilities would be provided by Alternative A although quality of recreation would be reduced. Alternative B would give the greatest proportion of day use.

1 / See Summary Tables for Numbers

4. Availability of recreation facilities

Activity	Alternative A	Proposed	Alternative B
Skiing	Most	Intermediate	Least
Snow activities	Intermediate	Most	Least
Fishing	-----	No differences	-----
Hunting		No differences	
Camping		No differences	
Drive for pleasure	Intermediate	Most	Least
Scenic viewing		No differences	
Water sports		No differences	
Mountaineering		No differences	
Resort	Most	Intermediate	Least
Golf	Intermediate	Most	Least
Picnicking	Intermediate	Most	Least

B. "Spinoff" effects of alternatives.

1. Overcrowding or under-use of facilities.

The Proposed Plan would have the least impact because it would be the most efficient administratively. Alternative A would be intermediate while Alternative B would be worst.

2. Diversion or encouraging use to avoid overcrowding.

The Proposed Plan best encourages use where it can be accommodated.

3. Contribution to local economics.

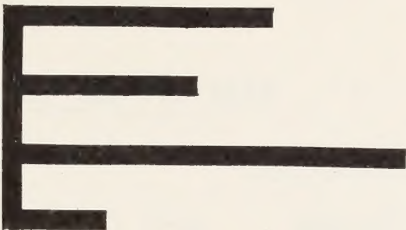
Because the local recreation economy depends on a retention of the present attractions and amenities of the area, Alternative B contributes the most to a healthy long-term economy.

Summary of "spin-off" effects.

	Alternative A	Proposed	Alternative B
Facility overcrowding	Intermediate	Worst	Most
Concentration of overcrowding	"	Most	Least
Contribution to local economy	Least	Intermed	Most

Administrative problems resulting from various alternatives: the most complex alternative to administer would be Alternative B. The least complex would be the proposed plan. Concentration of people simplifies and makes for efficient use of services until the concentration becomes too great. The proposed plan would improve administration over the present situation.

Administrative Efficiency Comparisons

EXISTING SITUATION		O.K.
ALTERNATIVE A		Fair
PROPOSED PLAN		Best
ALTERNATIVE B		Worst

Positive Effects of the Various Land Allocations

Alternative A - Local residents dominate the recreation scene. Greater density of population makes more elaborate resort type recreation facilities feasible. A wider range of recreation opportunities is available.

Proposed Plan - Recreation opportunities for the greatest diversity of people from all economic classes. Public benefits maximized. Opportunity for urban access to benefits of outdoor recreation with quality reasonably sustained.

Alternative B - Quality of recreation greatest. All present values retained with little risk of irreversible damage to the recreation attraction.

EXHIBIT R

ENERGY ANALYSIS

MT. HOOD PLANNING UNIT

ASSESSMENT OF BTU CONSUMPTION PER YEAR

<u>Proposed Plan</u>		<u>Residential</u>	<u>Auto</u>	<u>Total</u>
Level I	) from	389x10 ⁹	558x10 ⁹	947x10 ⁹
5400-8700 houses	) to	483x10 ⁹	558x10 ⁹	1041x10 ⁹
Level II	) from	409x10 ⁹	730x10 ⁹	1139x10 ⁹
7300-10400 houses	) to	576x10 ⁹	730x10 ⁹	1306x10 ⁹
<u>Alternative A</u>				
16800-18600 houses	from	915x10 ⁹	963x10 ⁹	1878x10 ⁹
	to	1011x10 ⁹	963x10 ⁹	1974x10 ⁹
<u>Alternative B</u>				
4100-5200 houses	from	239x10 ⁹	413x10 ⁹	652x10 ⁹
	to	297x10 ⁹	597x10 ⁹	894x10 ⁹
<u>Existing Situation</u>				
2620 houses		160x10 ⁹	291x10 ⁹	451x10 ⁹

ASSESSMENT OF AUTO AND FURNACE EMISSIONS PER YEAR

<u>Proposed Plan</u>		<u>Furnace (Tons/yr)</u>	<u>Auto (Tons/yr)</u>	<u>Total</u>
Level I	) from	75.18	4995.19	5070.37
5400-8700 houses	) to	89.85	4995.19	5085.04
Level II	) from	78.45	5982.35	6060.80
7300-10400 houase	) to	103.70	5982.35	6086.05
<u>Alternative A</u>				
16800-18600 houses	from	155.88	7890.38	8046.26
	to	170.55	7890.38	8060.93
<u>Alternative B</u>				
4100-5200 houses	from	52.36	3378.82	3431.18
	to	61.29	4726.54	4787.83
<u>Existing Situation</u>				
		35.60	2436.40	2472.00

METHOD OF CALCULATING BTUs (Residential)

Assumptions. Number houses given on p.128 of work copy of draft.

- 52% of total houses have gas furnaces
- 8% of total houses have oil furnaces
- 40% of total houses have electric furnaces
- 60% of total houses have electric utilities

Multipliers

- # houses x 35,100,000 = annual BTUs from gas furnaces
- # houses x 62,196,000 = annual BTUs from oil furnaces
- # houses x 41,894,575 = annual BTUs from electric furnaces
- # houses x 22,150,370 = annual BTUs from electric utilities

METHOD OF CALCULATING BTUs (Auto)

Distance between mile posts x 26.82 x ADT = gallons fuel consumed
 Gallons fuel consumed x 114,000 = BTUs

METHOD OF CALCULATING EMISSIONS (Residence)Fuel Mixture

Ft³ gas/year existing houses = 35,100
 Gal oil/year existing houses = 438

Ft³ gas/year new construction = 83,100
 Gal oil/year new construction = 95

Ft³ gas consumed/year = # houses x fuel mixture for gas

Gal gas consumed/year = # houses x fuel mixture for oil

Lbs emissions = gas or oil consumed x coefficient from table below:

Natural gas	Part	NOx	SOx	CO	HC
Lbs emissions/ 10 ⁶ ft ³	19	80	0.6	20	8
Oil					
Lbs emissions/ 10 ³ gal	10	12	30	5	3

METHOD OF CALCULATING EMISSIONS (Autos)

EPA (1975) grams emissions/vehicle mile:

.58 .20 5.0 50 6.5

Grams emissions/year = (ADT x distance between MPs x 365 days/year) x
 grams emissions from table

Tons emissions = grams emissions/907,180

EXHIBIT S

ASSESSMENT - HIGHWAYS - STATE SYSTEM

Highway Capacity and Design Improvements Needed. Each of three alternative plans discussed in this EIS propose some degree of population growth and increased recreational use. The sizes and distributions of resident populations and the locations and types of recreational sites determine transportation needs for the area for each plan. Based upon population allocations and projections of recreational use proposed in each plan, traffic volumes were estimated for the Cherryville-Timberline Highway Section of U.S. 26 and are displayed in Table 2.

Analysis of traffic volumes was concentrated on the Mt. Hood Highway from Cherryville to Timberline Highway since this is the highway section in the Mt. Hood Planning Unit which would receive the greatest impact from any proposed development within the area.

Traffic volumes on the other State Highway Sections in the Planning Unit would not even begin to approach their design capacities under any of the alternative plans. Therefore they will not be given further detailed consideration in this section. No attempt was made to assess the impact on highways outside the Planning Unit.

Table 2 shows that severe overloads will occur on all segments of the Mt. Hood Highway assuming Alternative "A" (Present Direction), even with major improvements on the highway. Analysis of the "Proposed Action" indicates traffic volumes on the Welches Road to Timberline Highway section would slightly exceed the improved two-lane capacity, assuming the "high" traffic projection figure. Traffic generated considering the "low" growth forecast for Alternative "B" is well below the capacity of the existing facility except for the approximately 2.5 mile section between Wildwood and Welches Road. Considering the "high growth" forecast for Alternative "B", the Wildwood to Welches Road segment would still need improved capacity. Traffic volumes on the Welches Road to Timberline Highway segment, however, would be only slightly above the existing capacity.

The above analysis assumes no increase in public transportation for any alternative future. Increases in public transit would allow downward adjustments in projected traffic volumes and therefore reduce needs for highway expansion for each alternative plan.

It should be noted that the design capacities shown in Table 2 are only for improved 2-lane and 4-lane facilities. The highway could be designed for an intermediate capacity by adding such features as widened shoulders, passing lanes, turning lanes, signals, and/or interchanges, in conjunction with an improved 2-lane design. Thus, if the improved 2-lane capacity will be exceeded slightly, it does not necessarily follow that 4 lanes will have to be constructed. Probable design requirements which take this into account are noted in Table 1 and are shown graphically in Figure A.

Right-of-Way Requirements. The highway design improvements noted above for each alternative plan generally would require additional highway right-of-way. Table 1 indicates a very rough estimate of the number of acres required for each section and the terrain encountered and impacted.

Mass Transportation. One of the possible ways in which the traffic impacts of the plan allocations can be mitigated is by means of a proportional increase in mass transportation - most likely busses. It would be necessary to initiate a strong program of incentives for expanded use of mass transit.

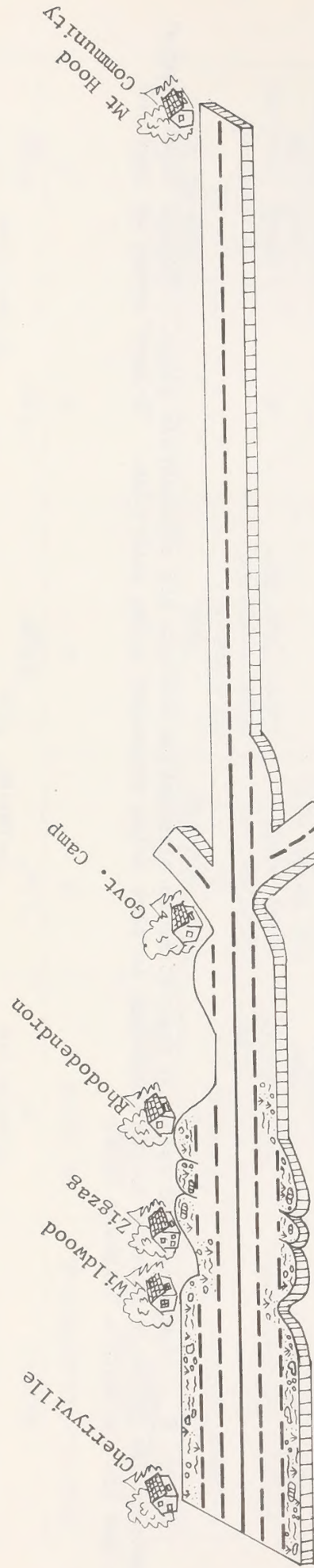
Section	Alternative "A"	"Proposed"		Plan		Alternative "B"	
		"Low"	"High"	"Low"	"High"	"Low"	"High"
Cherryville-Wildwood Assumes 15' R/W per lane added	30 acres Rural Residential	0	0	0	0	0	0
Wildwood-Welches Rd. Assumes 200' average width, previously acquired R/W.	Uses 80 acres Already acquired on north side Dwyer Corridor.	Uses 40 acres to 80 acres already acquired north side Dwyer Corridor.	Uses 80 acres already acquired Dwyer Corridor.	0		Uses 40 acres to 80 acres already acquired north side Dwyer Corridor	
Welches Rd.- Rhododendron Assumes 15' new R/W per lane added.	3 acres Commercial frontage & forest	3 acres Commercial frontage & forest	3 acres Commercial frontage & forest	0		0	
Rhododendron- Timberline Hwy. Assumes 150' previously cleared R/W & forest.	90 acres Some previously cleared & old growth forest.	0	90 acres Some previously cleared & old growth forest.	0		0	
Total new R/W (acres) used	203	43-83	123	0		40-80	

Table 1. Approximate State Highway (U.S.26) right-of-way requirements anticipated for each alternative plan. Types of land affected is indicated.

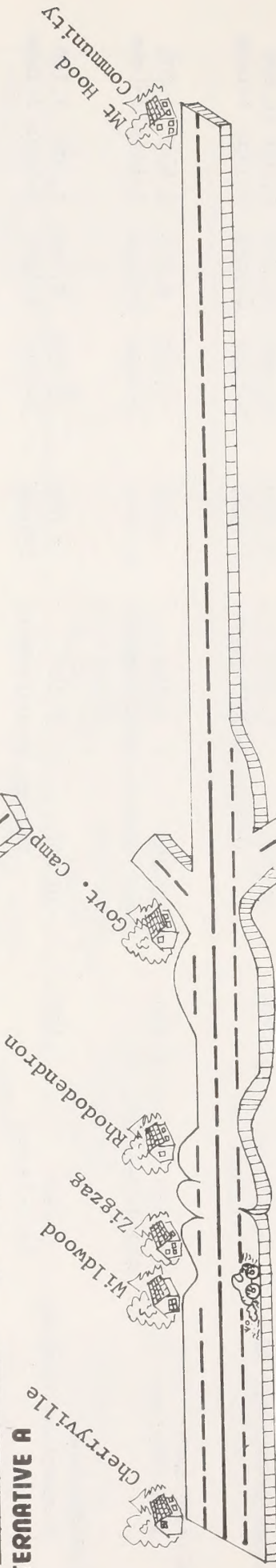
A L T E R N A T E S

<u>Section</u>	<u>Existing Capacity</u>	<u>Improved Two-Lane Capacity</u>	<u>Four-Lane Capacity</u>	<u>1972 ADT</u>	<u>"A"</u>	<u>PROPOSED</u>		<u>"B"</u>	
						<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
Cherryville-Wildwood	26,200 (4-lanes)	--	26,200 Design Requirement: 4-lanes +	5,600	28,300	12,000 4-lane	16,200 4-lane	8,200 4-lane	11,800 4-lane
Wildwood-Welches Rd.	6,500 (2-lanes)	11,000	26,700 Design Requirement: 4-lane	5,400	19,500	11,600 3-lane	16,000 4-lane	8,200 2-lane	11,600 3-lane
Welches Road-Rhododendron	7,800 (2-3-lanes)	8,700	22,200 Design Requirement: 4-lane	3,700	9,700	7,100 3-lane	9,000 3-lane	5,900 2-lane	8,000 2-lane
Rhododendron-Timberline Highway	6,300 (2-3-lanes)	7,500	20,800 Design Requirement: 3-lane	3,100	8,000	6,500 2-lane	8,300 3-lane	5,200 2-lane	7,100 2-lane

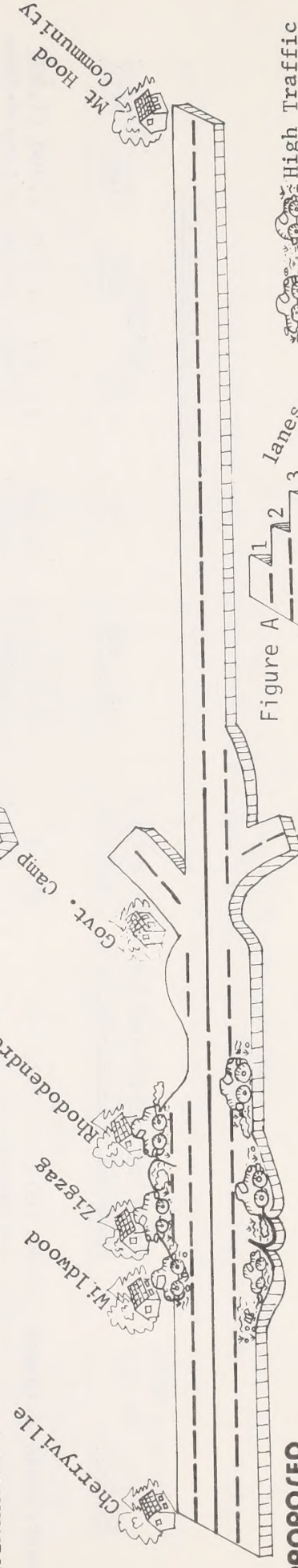
TABLE 2. Comparison of existing capacities to alternative designs and alternative plans. "Design requirements" indicate the probable minimum design necessary to meet trips generated under each plan. "3-lane" means an improved 2-lane section with a climbing lane.



ALTERNATIVE A



ALTERNATIVE B



PROPOSED

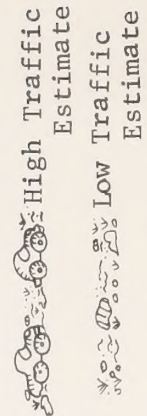
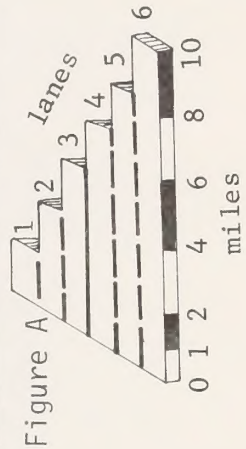


EXHIBIT T

APPENDIX

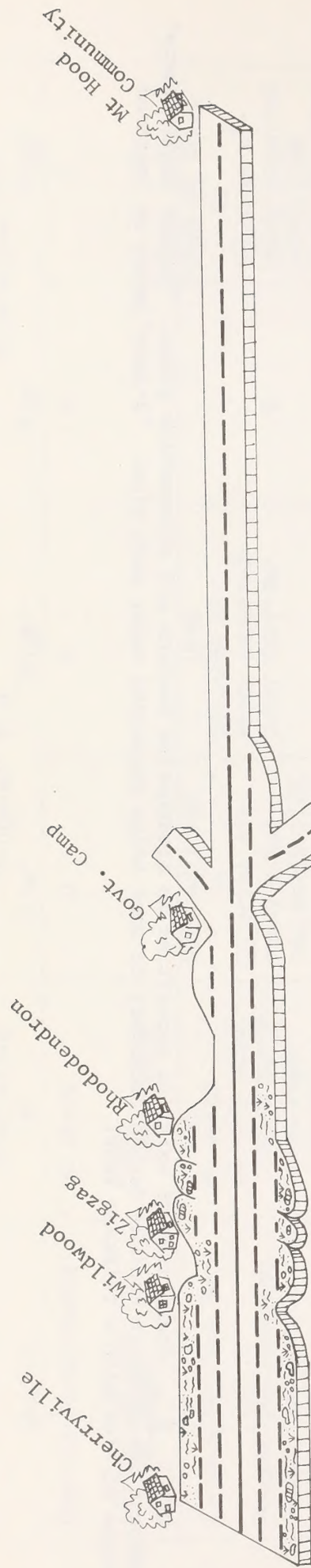
OREGON DEPARTMENT OF TRANSPORTATION
Planning Section
Plan Development Branch

MT. HOOD PLANNING UNIT

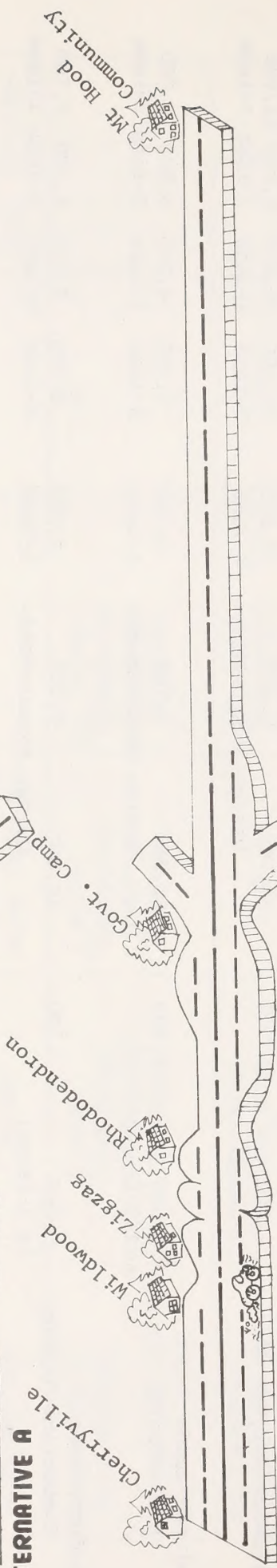
TRAFFIC INFORMATION

Information on seasonal variation in traffic volume on highways within the Mt. Hood Planning Unit is very limited. During 1972, counts were taken at several locations at different times of the year and analysis of these traffic counts provide a clue to the seasonal variation taking place in the Mt. Hood area. The following traffic counts for 1972 on the Mt. Hood Highway are available.

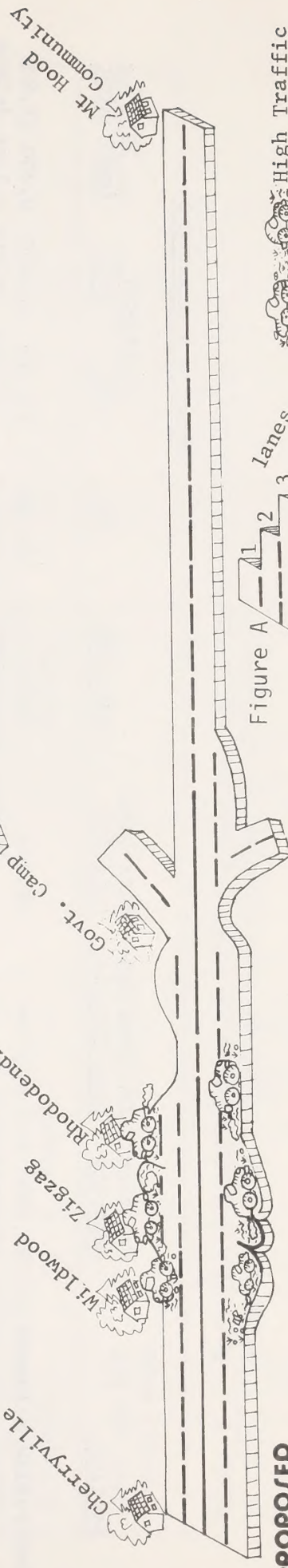
<u>Location</u>	<u>Date</u>	<u>Period of Count</u>
At Timberline Highway	Saturday 2/12/72	8 hour
At Timberline Highway	Thursday 3/9/72	16 hour
At Government Camp Road (West Road)	Saturday 3/11/72	8 hour
At Government Camp Road (East Road)	Sunday 3/12/72	8 hour
At Warm Springs Highway	Sunday 6/2/72	8 hour
At Warm Springs Highway	Tuesday 6/6/72	16 hour
At Warm Springs Highway	6/21 through 6/28/72	1 week



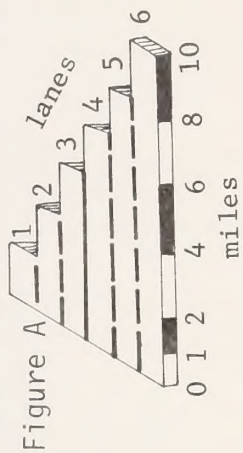
ALTERNATIVE A



ALTERNATIVE B



PROPOSED



High Traffic Estimate
Low Traffic Estimate

EXHIBIT T

APPENDIX

OREGON DEPARTMENT OF TRANSPORTATION

Planning Section

Plan Development Branch

MT. HOOD PLANNING UNIT

TRAFFIC INFORMATION

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At Warm Springs Highway	6/21 through 6/28/72	1 week



DEPARTMENT OF TRANSPORTATION

HIGHWAY BUILDING

SALEM, OREGON

97310

ROBERT W. STRAUB
GOVERNOR

October 13, 1975

GEORGE M. BALDWIN
Director of Transportation

SAM R. HALEY
Deputy Director

Mr. John White
Mt. Hood Planning Unit
2440 S.E. 195th Avenue
Portland, OR 97233

Dear Mr. White:

SUBJECT: Mt. Hood Planning Unit-Clackamas County

Enclosed is a short discussion on "Capacity in Terms of Average Daily Traffic." This paper provides a brief outline of the factors used to calculate hourly capacity and conversion of hourly capacity to daily capacity.

Also enclosed are the critical hour listing and the year end summary for each of the five permanent recorder stations referred to in the text. The year end summary provides information on average weekday and average daily travel for the year. The critical hour listing shows the hourly traffic volume recorded during the highest 60 hours of the year and the dates when these occurred.

I hope this information will aid in explaining capacity and factors used in calculating capacity.

Sincerely,

Tom Schwab
Transportation Engineer

Enclosure

DISTRIBUTION	
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CAPACITY IN TERMS OF AVERAGE DAILY TRAFFIC

Purpose

The purpose of this report is to illustrate the effects of various factors on the average daily capacity, a term often used to define the carrying capacity of a highway. In some cases a two-lane highway can carry more than twice the average daily traffic than a similar highway facility and yet these same highways are capable of handling comparable traffic volumes under similar operating conditions during the design hour.

Discussion

The general unit of measure for traffic on a highway is the annual average daily traffic volume (ADT). This represents the total traffic for the year divided by 365 or the average volume per day, a value readily understood and widely used.

Traffic volume during an interval of time shorter than a day more appropriately reflects the operating condition which should be used for design of that traffic to be served. The design hour volume (DHV) is the thirtieth highest hourly volume for the year. The DHV is that traffic volume the designer expects to provide for on a new or improved facility even though a roadway is capable of carrying a higher volume. Traffic volumes greater than the design hour volume result in severe congestion resulting in reduced operating speeds.

Design capacity is defined as the maximum number of vehicles that can pass over a given section of roadway in both directions on a two-lane highway during a one hour period while maintaining stable operating speed of 45 to 50 mph.

Possible capacity is defined as the maximum number of vehicles that can pass over a given section of roadway during a one hour period regardless of their effect on delaying drivers and restricting their freedom to maneuver. Usually operating speed of 35 mph or less.

Although the most useful expression of capacity for purposes of design is vehicles per hour, it may be desirable also to consider capacity in terms of average daily traffic.

Table 1 shows the variation between hourly volumes and ADT at five permanent traffic recording stations on two-lane roadways with similar ADT. The first three recorders listed in the table are located on recreational routes. Traffic volumes influenced by weekend traffic during a few months of the year is far in excess of any traffic during the remaining months of the year resulting in high peak hour volumes relative to ADT.

Comparing traffic data shown in Table 1, it can be seen that the 1974 ADT at each of the recorder locations is approximately the same. The hourly capacity calculated at each location is also similar, but the ADT capacity ranges from 4,800 to 11,800 vehicles. This range of ADT capacity is the result of converting the hourly capacity to an equivalent ADT capacity. ADT capacity is calculated by dividing the hourly capacity by the percent design hour factor.

Again, referring to Table 1, and in particular the Gales Creek Recorder, it should be noted that the maximum hourly volume of 1,089 is approaching the hourly capacity of this section. If no highway improve-

ment is made in the near future, it can be expected that, although the ADT will increase, very little increase will occur in the maximum hourly volume. Severe congestion is already encountered during this period and any increased traffic flow will be forced to travel at other periods of time when less congestion is encountered.

The above discussion illustrates the fluctuations in hourly traffic volume on rural highways relative to the type of traffic to be served. Care must be exercised in computing the thirtieth hour from an ADT in some future year since the current percent of the ADT may not hold where land use served by the facility may change from that assumed. Any change in the thirtieth hour percent of ADT will result in a change in the daily capacity since the hourly capacity is a fixed value for given roadway condition while daily capacity is a function of the traffic characteristics of that highway.

Tom Schwab
9-18-75

TABLE 1

VARIATION IN TRAFFIC VOLUME AT FIVE PERMANENT RECORDERS DURING 1974

<u>Location</u>	<u>1974 ADT</u>	<u>Max. Day</u>	<u>Max. Hr.</u>	<u>30th^{1/} HV</u>	<u>30th^{2/} HV%</u>	<u>Hourly^{3/} Capacity</u>	<u>ADT Capacity</u>
Gales Creek 34-04	2998	9564	1089	738	24.6	1180	4800
Sisters 9-14	2892	7787	758	541	18.7	1290	6900
Warm Springs 16-06	3199	8224	874	534	16.7	1080	6500
Monroe 2-07	3200	5358	700	379	11.8	1300	11000
Cairo Jct. 23-06	3131	4968	380	339	10.8	1280	11800

^{1/} 30th highest hourly volume of the year. (Usually considered as the design hour volume)

^{2/} 30th highest hour expressed as a percent of ADT.

^{3/} Possible hourly capacity under existing roadway conditions.

OREGON STATE HIGHWAY DEPARTMENT

1974 YEAR END TRAFFIC SUMMARY, PERMANENT STATIONS

STATION NO: 34004 GALES CREEK WILSON RIVER HWY OREG
1.0 MILE WEST OF GLENNWOOD

STATION	DATE	AWD	% ADT	ADT	% ADT
34004	ANNUAL AVERAGE DAY	2,404		2,998	
34004	JAN	1,662	55.4	1,804	60.2
34004	FEB	1,692	56.4	1,933	64.5
34004	MAR	1,965	65.5	2,326	77.6
34004	APR	1,919	64.0	2,547	85.0
34004	MAY	2,453	81.8	3,145	104.9
34004	JUNE	2,923	97.5	3,870	129.1
34004	JULY	3,115	103.9	4,085	136.3
34004	AUG	3,644	121.5	4,659	155.4
34004	SEPT	3,002	100.1	3,812	127.2
34004	OCT	2,700	90.1	3,300	110.1
34004	NOV	2,098	70.0	2,579	86.0
34004	DEC	1,672	55.8	1,910	63.7

STATION	DATE	HRS	VOL	% ADT
34004	06-30-74	1	1,089	36.3
34004	05-27-74	10	840	28.0
34004	08-11-74	20	768	25.6
34004	08-18-74	30	738	24.6
34004	06-23-74	40	720	24.0
34004	08-18-74	50	688	22.9
34004	08-04-74		9,564	319.0

STATION: 34004 37

GALES CREEK WILSON RIVER HWY CRED
1.0 MILE WEST OF GLENNWOOD

HOLIDAY

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN
1	6/30/74	6P	1089				SUN
2	8/04/74	6P	1014				SUN
3	8/04/74	7P	948				SUN
4	6/30/74	5P	942				SUN
5	5/27/74	6P	921	MON			
6	8/04/74	5P	893				SUN
7	5/27/74	5P	875	MON			
8	9/02/74	6P	867	MON			
9	9/22/74	6P	853				SUN
10	5/27/74	4P	840	MON			
11	7/28/74	7P	833				SUN
12	8/25/74	6P	821				SUN
13	7/28/74	6P	812				SUN
14	9/02/74	5P	806	MON			
15	8/11/74	5P	801				SUN
16	5/27/74	7P	793	MON			
17	8/04/74	8P	781				SUN
18	9/22/74	7P	779				SUN
19	7/21/74	6P	770				SUN
20	8/11/74	6P	768				SUN
21	6/30/74	7P	763				SUN
22	9/02/74	4P	760	MON			
23	6/30/74	4P	760				SUN
24	9/02/74	2P	759	MON			
25	5/05/74	5P	745				SUN
26	7/21/74	7P	745				SUN
27	3/24/74	5P	744				SUN
28	6/23/74	5P	742				SUN
29	7/07/74	6P	740				SUN
30	8/18/74	6P	738				SUN
31	9/02/74	1P	736	MON			
32	7/07/74	7P	736				SUN
33	9/02/74	3P	733	MON			
34	9/22/74	5P	730				SUN
35	7/28/74	8P	730				SUN
36	8/25/74	5P	726				SUN
37	8/25/74	7P	726				SUN
38	8/04/74	4P	725				SUN
39	9/15/74	6P	725				SUN
40	6/23/74	6P	720				SUN
41	5/27/74	2P	720	MON			
42	3/24/74	6P	716				SUN
43	8/11/74	7P	715				SUN
44	5/27/74	3P	715	MON			
45	6/23/74	4P	711				SUN
46	6/30/74	2P	706				SUN
47	5/05/74	6P	705				SUN
48	9/15/74	7P	699				SUN
49	5/05/74	7P	696				SUN
50	8/18/74	4P	688				SUN

1.0 MILE WEST OF GLENNWOOD

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN
51	6/30/74	3P	685				SUN
52	8/11/74	4P	684				SUN
53	6/23/74	3P	682				SUN
54	8/04/74	2P	679				SUN
55	9/02/74	7P	678	MON			
56	7/28/74	5P	678				SUN
57	5/27/74	1P	677	MON			
58	7/21/74	8P	675				SUN
59	4/21/74	6P	664				SUN
60	6/09/74	6P	663				SUN

HOLIDAY

H

H

OREGON STATE HIGHWAY DEPARTMENT

1974 YEAR END TRAFFIC SUMMARY, PERMANENT STATIONS

STATION NO: 09014 SISTERS SANTIAM HWY US20
0.1 MILE NORTH OF ORE242 AT SISTERS

STATION	DATE	AWD	% ADT	ADT	% ADT
09014	ANNUAL AVERAGE DAY	2,647		2,892	
09014	JAN	1,351	46.7	1,407	48.7
09014	FEB	1,333	46.1	1,433	49.6
09014	MAR	1,500	51.9	1,750	60.5
09014	APR	2,150	74.3	2,394	82.8
09014	MAY	2,817	97.4	3,134	108.4
09014	JUNE	3,616	125.0	3,958	136.9
09014	JULY	3,999	138.3	4,369	151.1
09014	AUG	4,126	142.7	4,463	154.3
09014	SEPT	3,537	122.3	3,824	132.2
09014	OCT	3,304	114.2	3,622	125.2
09014	NOV	2,215	76.6	2,354	81.4
09014	DEC	1,819	62.9	1,990	68.8

STATION	DATE	HRS	VOL	% ADT
09014	05-27-74	1	758	26.2
09014	05-27-74	10	621	21.5
09014	10-13-74	20	589	20.4
09014	12-01-74	30	541	18.7
09014	10-06-74	40	517	17.9
09014	10-13-74	50	504	17.4
09014	10-04-74		7,787	269.3

STATION 09014. 10

0.1 MILE NORTH OF OREZ42 AT SISTERS:

HOLIDA

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN	HOLIDA
1	5/27/74.	3P	758	MON				H
2	5/27/74.	4P	709	MON				H
3	5/27/74.	5P	684	MON				H
4	5/27/74.	2P	682	MON				H
5	7/07/74.	3P	663				SUN	A
6	9/02/74.	3P	654	MON				H
7	10/06/74.	5P	649				SUN	
8	9/02/74.	4P	636	MON				H
9	6/09/74.	5P	625				SUN	
10	5/27/74.	1P	621	MON				H
11	10/06/74.	3P	618				SUN	
12	7/07/74.	4P	615				SUN	A
13	10/13/74.	4P	611				SUN	
14	9/02/74.	2P	610	MON				H
15	7/07/74.	2P	603				SUN	A
16	7/07/74.	1P	599				SUN	A
17	10/06/74.	4P	596				SUN	
18	6/09/74.	4P	594				SUN	
19	9/02/74.	5P	593	MON				H
20	10/13/74.	5P	589				SUN	
21	7/07/74.	5P	583				SUN	A
22	9/02/74.	1P	582	MON				H
23	10/04/74.	5P	575		FRI			
24	10/13/74.	3P	572				SUN	
25	5/27/74.	6P	567	MON				H
26	10/06/74.	6P	556				SUN	
27	5/27/74.	12A	550	MON				H
28	7/21/74.	4P	544				SUN	
29	7/07/74.	6P	543				SUN	A
30	12/01/74.	4P	541				SUN	A
31	10/04/74.	9P	540		FRI			
32	10/13/74.	2P	540				SUN	
33	7/28/74.	5P	533				SUN	
34	8/18/74.	3P	530				SUN	
35	8/18/74.	4P	530				SUN	
36	10/04/74.	12A	529		FRI			
37	10/04/74.	4P	529		FRI			
38	10/04/74.	7P	525		FRI			
39	8/18/74.	5P	525				SUN	
40	10/06/74.	2P	517				SUN	
41	9/02/74.	6P	513	MON				H
42	7/06/74.	4P	510			SAT		A
43	7/21/74.	3P	510				SUN	
44	8/25/74.	5P	510				SUN	
45	9/02/74.	12A	509	MON				H
46	10/04/74.	1P	509		FRI			
47	7/06/74.	1P	509			SAT		A
48	6/23/74.	5P	508				SUN	
49	12/01/74.	5P	506				SUN	A
50	10/13/74.	6P	504				SUN	

STATION 09014 16

SISTERS SANTIAM MOUNTAINS

0.1 MILE NORTH OF ORE242 AT SISTERS

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN	HOLI
51	7/07/74	12A	503				SUN	
52	8/31/74	2P	502			SAT	SUN	A
53	10/04/74	3P	500		FRI			P
54	8/11/74	3P	499				SUN	
55	8/18/74	2P	499				SUN	
56	8/25/74	3P	497				SUN	
57	10/04/74	11A	496		FRI			
58	7/21/74	2P	496				SUN	
59	7/21/74	5P	495				SUN	
60	8/11/74	5P	493				SUN	

OREGON STATE HIGHWAY DEPARTMENT

1974 YEAR END TRAFFIC SUMMARY, PERMANENT STATIONS

STATION NO: 16006 WARM SPRINGS WARM SPRGS HWY US26
2.0 MILE SOUTHEAST OF WARM SPRINGS

STATION	DATE	AWD	% ADT	ADT	% ADT
16006	ANNUAL AVERAGE DAY	3,185		3,199	
16006	JAN	1,941	60.7	1,823	57.0
16006	FEB	1,783	55.7	1,706	53.3
16006	MAR	2,281	71.3	2,251	70.4
16006	APR	2,863	89.5	3,018	94.3
16006	MAY	3,501	109.4	3,696	115.5
16006	JUNE	3,878	121.2	4,069	127.2
16006	JULY	4,049	126.6	4,257	133.1
16006	AUG	4,048	126.5	4,156	129.9
16006	SEPT	3,912	122.3	3,846	120.2
16006	OCT	4,028	125.9	3,983	124.5
16006	NOV	3,152	98.5	2,947	92.1
16006	DEC	2,779	86.9	2,636	82.4

STATION	DATE	HRS	VOLI	% ADT
16006	05-27-74	1	874	27.3
16006	07-07-74	10	624	19.5
16006	05-27-74	20	562	17.6
16006	09-02-74	30	534	16.7
16006	10-13-74	40	513	16.0
16006	06-23-74	50	478	14.9
16006	10-04-74		8,224	257.1

STATION 10000

2.0 MILE SOUTHEAST OF WARM SPRINGS

MUL

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN
1	5/27/74	4P	874	MON			
2	5/27/74	3P	786	MON			
3	5/27/74	5P	753	MON			
4	5/27/74	6P	731	MON			
5	5/27/74	2P	716	MON			
6	5/27/74	1P	681	MON			
7	7/07/74	4P	676				SUN
8	5/24/74	9P	634		FRI		
9	5/24/74	8P	625		FRI		
10	7/07/74	5P	624				SUN
11	10/04/74	4P	608		FRI		
12	7/07/74	3P	607				SUN
13	10/06/74	5P	598				SUN
14	10/04/74	8P	588		FRI		
15	10/04/74	5P	582		FRI		
16	5/27/74	12A	582	MON			
17	10/06/74	4P	574				SUN
18	9/02/74	3P	569	MON			
19	7/07/74	2P	568				SUN
20	5/27/74	7P	562	MON			
21	10/04/74	7P	552		FRI		
22	10/06/74	6P	552				SUN
23	10/13/74	5P	552				SUN
24	7/07/74	6P	551				SUN
25	9/02/74	4P	550	MON			
26	7/14/74	6P	549				SUN
27	10/04/74	9P	541		FRI		
28	5/25/74	12A	540			SAT	
29	5/24/74	7P	538		FRI		
30	9/02/74	2P	534	MON			
31	10/04/74	3P	534		FRI		
32	7/07/74	1P	532				SUN
33	6/23/74	5P	530				SUN
34	9/02/74	6P	528	MON			
35	5/24/74	4P	526		FRI		
36	10/04/74	6P	525		FRI		
37	5/25/74	11A	525			SAT	
38	5/24/74	5P	521		FRI		
39	5/25/74	1P	515			SAT	
40	10/13/74	4P	513				SUN
41	10/13/74	3P	508				SUN
42	9/02/74	5P	505	MON			
43	7/14/74	1P	500				SUN
44	5/24/74	10P	488		FRI		
45	5/24/74	6P	484		FRI		
46	10/04/74	2P	481		FRI		
47	8/23/74	4P	480		FRI		
48	8/30/74	9P	479		FRI		
49	10/06/74	3P	478				SUN
50	6/23/74	6P	478				SUN

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN
51	4/28/74	5P	477				SUN
52	10/11/74	5P	474		FRI		SUN
53	8/18/74	4P	472				SUN
54	5/26/74	5P	471				SUN
55	6/16/74	5P	468				SUN
56	8/18/74	3P	468				SUN
57	10/11/74	4P	467		FRI		
58	10/04/74	12A	465		FRI		
59	10/04/74	11A	459		FRI		
60	4/28/74	4P	455				SUN

1974 YEAR END TRAFFIC SUMMARY, PERMANENT STATIONS:

STATION NO: 02007 MONROE PACIFIC HWY WEST ORE99W
5.0 MILE NORTH OF MONROE

STATION	DATE	AWD	% ADT	ADT	% ADT
02007	ANNUAL AVERAGE DAY	3,109		3,200	
02007	JAN	2,334	72.9	2,345	73.3
02007	FEB	2,427	75.8	2,381	74.4
02007	MAR	2,914	91.1	2,976	93.0
02007	APR	2,961	92.5	3,139	98.1
02007	MAY	3,258	101.8	3,429	107.2
02007	JUNE	3,341	104.4	3,432	107.3
02007	JULY	3,369	105.3	3,435	107.3
02007	AUG	3,529	110.3	3,665	114.5
02007	SEPT	3,508	109.6	3,596	112.4
02007	OCT	3,265	102.0	3,421	106.9
02007	NOV	3,268	102.1	3,401	106.3
02007	DEC	3,128	97.8	3,177	99.3

STATION	DATE	HRS	VOL	% ADT
02007	11-23-74	1	700	21.9
02007	11-27-74	10	419	13.1
02007	10-12-74	20	401	12.5
02007	06-02-74	30	379	11.8
02007	11-08-74	40	373	11.7
02007	12-01-74	50	368	11.5
02007	11-23-74		5,358	167.4

STATION 02007

5.0 MILE NORTH OF MONROE

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN	HOLID
1	11/23/74	1P	700			SAT		
2	11/23/74	5P	683			SAT		
3	11/23/74	12A	597			SAT		
4	11/27/74	5P	473	WED				P
5	12/01/74	5P	446				SUN	A
6	11/28/74	12A	437	THR				H
7	10/12/74	1P	428			SAT		
8	11/23/74	6P	422			SAT		
9	10/11/74	5P	420		FRI			
10	11/27/74	6P	419	WED				P
11	10/12/74	5P	418			SAT		
12	8/09/74	5P	412		FRI			
13	10/12/74	12A	408			SAT		
14	4/14/74	7P	408				SUN	
15	5/05/74	6P	406				SUN	
16	8/11/74	6P	406				SUN	
17	9/29/74	7P	406				SUN	
18	9/29/74	6P	405				SUN	
19	11/27/74	4P	403	WED				P
20	10/12/74	6P	401			SAT		
21	10/19/74	1P	401			SAT		
22	5/12/74	7P	395				SUN	
23	10/11/74	7P	394		FRI			
24	11/08/74	5P	393		FRI			P
25	11/28/74	11A	393	THR				H
26	10/11/74	3P	389		FRI			
27	5/12/74	6P	388				SUN	
28	11/16/74	1P	383			SAT		
29	11/16/74	5P	383			SAT		
30	6/02/74	7P	379				SUN	
31	5/19/74	6P	379				SUN	
32	9/22/74	6P	378				SUN	
33	11/23/74	11A	378			SAT		
34	5/27/74	5P	378	MON				H
35	8/04/74	7P	377				SUN	
36	11/03/74	5P	375				SUN	
37	9/15/74	6P	375				SUN	
38	5/24/74	6P	375		FRI			P
39	5/10/74	6P	374		FRI			
40	11/08/74	6P	373		FRI			P
41	8/11/74	7P	373				SUN	
42	11/16/74	12A	373			SAT		
43	4/12/74	5P	372		FRI			
44	3/24/74	6P	372				SUN	
45	8/04/74	6P	371				SUN	
46	9/27/74	6P	371		FRI			
47	12/01/74	6P	370				SUN	A
48	5/03/74	5P	369		FRI			
49	10/11/74	2P	369		FRI			
50	12/01/74	4P	368				SUN	A

STATION 02001

5.0 MILE NORTH OF MONROE

HOLIDAY

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN
51	4/14/74	6P	368				SUN
52	10/04/74	6P	367		FRI		
53	10/13/74	5P	366				SUN
54	5/05/74	7P	365				SUN
55	11/27/74	3P	365	WED			
56	11/01/74	5P	363		FRI		
57	6/02/74	6P	363				SUN
58	9/10/74	6P	362	TUE			
59	10/19/74	6P	362			SAT	
60	4/14/74	8P	361				SUN

P

OREGON STATE HIGHWAY DEPARTMENT

1974 YEAR END TRAFFIC SUMMARY, PERMANENT STATIONS

STATION NO: 23006 CAIRO JCT CENTRAL OREGON HWY US26
0.3 MILE WEST OF ORE201 JCT.

STATION	DATE	AWD	% ADT	ADT	% ADT
23006	ANNUAL AVERAGE DAY	3,276		3,131	
23006	JAN	2,585	82.6	2,350	75.1
23006	FEB	2,593	82.8	2,435	77.8
23006	MAR	2,713	86.6	2,543	81.2
23006	APR	2,950	94.2	2,850	91.0
23006	MAY	3,281	104.8	3,164	101.1
23006	JUNE	3,707	118.4	3,566	113.9
23006	JULY	3,873	123.7	3,712	118.6
23006	AUG	4,197	134.0	4,052	129.4
23006	SEPT	3,891	124.3	3,768	120.3
23006	OCT	3,527	112.6	3,403	108.7
23006	NOV	3,173	101.3	2,994	95.6
23006	DEC	2,824	90.2	2,732	87.3

STATION	DATE	HRS	VOL	% ADT
23006	09-03-74	1	380	12.1
23006	09-06-74	10	359	11.5
23006	08-30-74	20	350	11.2
23006	09-20-74	30	339	10.8
23006	09-06-74	40	331	10.6
23006	09-09-74	50	327	10.4
23006	08-16-74		4,968	158.7

STATION 23005 / CAIRO JCT CENTRAL OREGON HWY 3000
0.3 MILE WEST OF ORE201 JCT.

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN	HOLIDAY
1	9/03/74	4P	380	TUE				A
2	7/03/74	6P	380	WED				P
3	8/30/74	5P	379		FRI			P
4	7/04/74	12P	375	THR				H
5	9/20/74	8P	371		FRI			
6	7/03/74	8P	369	WED				P
7	10/04/74	5P	364		FRI			
8	8/16/74	3P	361		FRI			
9	10/18/74	5P	360		FRI			
10	9/06/74	5P	359		FRI			
11	8/15/74	5P	359	THR				
12	8/16/74	6P	358		FRI			
13	8/16/74	7P	358		FRI			
14	10/04/74	6P	356		FRI			
15	8/16/74	5P	356		FRI			
16	7/01/74	4P	355	MON				
17	8/19/74	6P	355	MON				
18	8/22/74	5P	352	THR				
19	8/23/74	5P	350		FRI			
20	8/30/74	3P	350		FRI			P
21	8/16/74	4P	349		FRI			
22	8/19/74	5P	343	MON				
23	9/10/74	5P	342	TUE				
24	8/15/74	4P	341	THR				
25	9/09/74	5P	340	MON				
26	8/12/74	5P	340	MON				
27	8/13/74	4P	340	TUE				
28	8/23/74	3P	340		FRI			
29	8/06/74	5P	339	TUE				
30	9/20/74	5P	339		FRI			
31	11/27/74	5P	339	WED				P
32	7/01/74	5P	338	MON				
33	8/09/74	3P	338		FRI			
34	9/05/74	5P	337	THR				
35	7/12/74	4P	336		FRI			
36	7/03/74	4P	332	WED				P
37	9/06/74	3P	332		FRI			
38	10/11/74	5P	332		FRI			
39	8/13/74	5P	332	TUE				
40	9/06/74	6P	331		FRI			
41	9/13/74	5P	331		FRI			
42	9/20/74	11P	331		FRI			
43	9/03/74	5P	330	TUE				A
44	8/13/74	2P	330	TUE				
45	8/19/74	4P	330	MON				
46	8/09/74	2P	329		FRI			
47	8/22/74	4P	329	THR				
48	8/30/74	4P	329		FRI			P
49	6/28/74	5P	328		FRI			
50	9/09/74	6P	327	MON				

RANK	DATE	HOUR	VOLUME	NWD	FRI	SAT	SUN
51	7/09/74	6P	327	TUE			
52	9/12/74	5P	326	THR			
53	5/24/74	3P	326		FRI		P
54	8/09/74	4P	325		FRI		
55	8/02/74	2P	324		FRI		
56	8/14/74	5P	324	WED			
57	11/27/74	6P	324	WED			P
58	8/15/74	6P	323	THR			
59	8/23/74	4P	323		FRI		
60	6/28/74	6P	323		FRI		

EXHIBIT U

Land Ownership Adjustment

Clackamas County has no plans for adjustment of land presently owned by the county. According to John McIntyre, Director of Public Works, the county would definitely be interested in reviewing any proposal that was initiated by a landowner.

In Section 36, T2S, R7E, W.M. 590 acres are owned by Clackamas County, ten acres are owned by G. Grampas, and 40 acres are owned by I. Moody. There is a possibility this might become part of the expanded Mt. Hood Wilderness. This is one reason the Forest Service would like to acquire this section through exchange and/or purchase procedures. I. Moody has contacted the Forest Service and is interested in an exchange or direct purchase. Publishers Paper Company has indicated they would be interested in an exchange with the Forest Service to consolidate ownership. This would include lands outside the Mt. Hood study area also. Publishers land to be acquired by the Forest Service in an exchange would be the W $\frac{1}{2}$, Section 16, T2N, R7E, W.M. In T2N, R7E, W.M. Forest Service land available for exchanging would be that portion of NE $\frac{1}{4}$, Section 29, W $\frac{1}{2}$ E $\frac{1}{2}$, Section 22 and W $\frac{1}{2}$ NW $\frac{1}{4}$, Section 23. Another land exchange possibility involves a portion of Section 24 adjacent to the road and BPA powerline. A decision on this will be dependent upon the determination of the range line between R7 and 8E. An exchange has been proposed for Section 16, T3S, R7E. The land northeast of Salmon River road is owned by a development firm but they have expressed a desire to sell or exchange this land to the Forest Service. The remainder of the Section southwest of Salmon River is involved in an exchange that is currently being evaluated. The private land in the Enola Hill area in Sections 12 and 13, T3S, R7E and Sections 7 & 18, T3S, R8E has also been offered to the Forest Service for exchange or purchase. In T3S, R8 $\frac{1}{2}$ E, the private land in Section 35 has been proposed for an exchange, as well as the Summit Meadows property in Section 25. Hood River County and the Forest Service have an exchange in the proposal stage that would transfer ownership of Hood River County land in Section 32, T1S, R10E; Sections 5, 6, 7 and 8 in T2S, R10E to the Forest Service. The other parcels to be exchanged are outside of the Mt. Hood Study Area. In all of the above proposed exchanges an environmental analysis report (EAR) must be approved for each project. The Summit Meadows exchange has an approved EAR. EARs for the other projects are programmed to be completed over the next (4) four years.

Land adjustment involving National Forest land can be accomplished under any of the following methods:

TYPES OF EXCHANGES:

Land for Land (Bipartite) - Non federal land is conveyed to U.S. in exchange for government land.

Land for Timber - Two methods.

Direct cut (bipartite) - U.S. grants the right to cut National Forest timber in exchange for land conveyed to it. It could be timber already under a sale contract or a new timber sale is made. We prefer the first method as competitive bidding establishes the stumpage values.

Tripartite - If proponent in exchange is unable to convert the timber into cash. In this case timber is designated within a going or prospective timber

sale area. The timber sale purchaser pays for the cut designated timber according to his contract. His payments are deposited to the timber sale deposit account and transferred periodically to the land exchange suspense account. These earnings are then available for delivery to the exchange proponent when title to the offered land has been accepted.

If for any reason the exchange is not finally completed, the collections are transferred to the National Forests fund. Because these exchanges involve the landowner, government and timber purchaser, they are termed tripartite.


Purchases - Appropriated funds; LWC Funds

Donations - Underhill site (example).

The land adjustment process, whether it be land exchange, purchase or a donation, involves most of the steps noted below:

LAND EXCHANGE PROCEDURES:

Process



- Informal Offer
- Minerals Claim Search
- Preliminary Title Insurance
- Justification Report and EAR
- Project Plan (R6-5460-6)
- Examination - Timber Appraisal
- Land Appraisal
- Formal Exchange Offer
- (Oregon Board of Forest Conservation-Weeks Act Exchange)
- Notification of County (IES)
- Exchange Report
- Regional Office Approval
- Washington Office Approval
- (National Forest Reservation Commission-Weeks Act Exchange)
- Notification to Proponent
- Publication Notice of Exchange
- Protest and Appeals
- Deed Preparation (Offered Land)
- Deed Executed (Offered Land)
- Deed Recorded
- Title Insurance
- Certificate of Possession Certificate of Use and Consent
- Title Approval (by GC or AG)
- Deed/Patent (selected land)
- Deed to Proponent (selected land)
- Deed Recorded
- County Tax Official Notified
- Close Case

EXHIBIT V
SILVICULTURAL GUIDELINES
FOR
VISUAL RESOURCE MANAGEMENT

The following broad prescriptions have been prepared to provide a general guide to the maximum timber harvest impact permissible on the Visual Resource. Other solutions to specific cases are possible with the assistance of landscape architects.

Middleground - Partial Retention

Single or two stage shelterwood with initial entry on 1/3 of area.* No more than 2/3 of BA removed. Prior to overwood removal, reproduction must be of sufficient height and density to mask soil color and provide tree texture. (6-8' tall)

Group selection (generally < five acres) is permissible on up to 1/3 of area. Reproduction should be about ten feet tall before adjacent areas are regeneration cut.

A combination of the two cutting methods may be highly desirable.

(Cut Calculated - Full Yield, if Loggable)

Middleground - Retention

Group Selection (generally < five acres) with no more than 20% of area to be removed in each 20 year period.

Single or two stage shelterwood can be used on up to 15% of area in a 20 year period with no more than 2/3 of BA removed. Prior to overwood removal, reproduction must be of sufficient height and density to mask soil color and provide tree texture.

Here again, a combination of the two cutting methods may be highly desirable.

(Cut Calculated - 75% yield, if Loggable)

Foreground - Retention

Small group selection (generally < one acre) with maximum of 25% of area cut each 50 years. Objective is to grow larger trees. Strict cleanup is an absolute necessity.

(Cut Calculation - 50-65% Yield due to Longer Rotation)

Foreground - Partial Retention

Small group selection (generally < one acre with maximum of 20% of area cutover in a decade.

Shelterwood may cover 100% of area. Overwood removal may not cover more than 50% of area within a decade. Prior to overwood removal, reproduction must be of sufficient height and density to mask soil color and provide tree texture.

Cutting in adjacent areas will be staggered to maintain visual variety.

Once more, a combination of cutting methods is very desirable.

(Cut Calculation - Full Yield, if Loggable)

* Area is to be defined here as that acreage which can be observed at one time from its most critical viewing point.

Revised 2/74

PRELIMINARY REPORT - SEWERAGE

INTRODUCTION

In March 1975, Stevens, Thompson & Runyan, Inc., a consulting, planning and engineering firm, was authorized by Clackamas County to proceed with the engineering studies necessary for completion of a report outlining the facilities necessary for the collection, treatment and disposal of sanitary sewage in the lower Highway 26 corridor area.

The study area consists of a strip of land approximately 12 miles long, extending from Alder Creek to Rhododendron and branching with the Sandy and Salmon Rivers. The study area encompasses approximately 25 square miles.

The following is an abstract of the preliminary draft sewerage facilities plan and environmental assessment prepared by Stevens, Thompson & Runyan, which is a companion document to the Interagency Draft EIS. The final facilities plan will be a compatible element of the adopted Mt. Hood Interagency Plan.

ABSTRACT

Existing Sewage Collection and Treatment Facilities. There are four sewage collection and treatment facilities presently in operation within this study area. They are located at the Timberline Rim Development near Brightwood, at Bowman's Golf Club and Mt. Hood Golf Club Terrace, both in the Welches area, and Zigzag Village Condominiums in the Lolo Pass area. All four systems are relatively small, privately owned and employ package-type activated sludge treatment plants.

All four use holding lagoons, spray irrigation or a combination of both to avoid discharge of effluent into the receiving streams during the low stream flow summer months. The Timberline Rim facility is rated at 250,000 gpd and the Zigzag Village plant has capacity for 100,000 gpd. (A 10,000 gpd activated sludge unit is currently in operation at Zigzag Village.) Both facilities are presently operating at flows far below their design capacity and, in fact, are not even required by the DEQ to submit monthly reports because of their low flows. The Mt. Hood Golf Club Terrace facility is currently operating at about half of its 15,000 gpd design capacity.

The treatment facility at Bowman's has been the subject of some concern by the DEQ over the past year or so because flow records have indicated that the plant is being grossly overloaded hydraulically. Records have indicated flows at almost twice the plant's 30,000 gpd design capacity. However, DEQ personnel have discovered only very recently that the flow meter installed at the facility is improperly calibrated and that actual flows should be in the range of 40-60 percent less than those previously indicated. This being the case, the Bowman's facility is probably operating at or slightly below its design capacity.

Of the four existing treatment facilities discussed, only one, the Timberline Rim plant, has sufficient capacity to warrant consideration for use as an interim regional treatment facility. This possibility is raised in several alternatives discussed later.

HIGHWAY 26 RECREATIONAL CORRIDOR SEWERAGE STUDY
EXISTING TREATMENT FACILITIES

Facility	Population P.E.		Flow mgd		Receiving Stream	Treatment Level (1)	Remarks
	Design	1975*	Design	1975			
Timberline Rim	1,827	25	0.250	--	Sandy River	20/20 (2)	There has been no discharge
Bowman's Golf Club	300	250	0.030	0.054	Salmon River	30/30 (3)	DEQ questions whether flow meter is properly calibrated.
Mt. Hood Golf Club Terrace	150	75	0.015	0.007	Salmon River	20/20 (3)	Serves approximately 25 homes.
Zigzag Condominiums	250	18	0.100 (4)	--	Sandy River	20/20 (2)	There has been no discharge.

* Estimate includes part-time residents.

- (1) Indicates permit requirements for effluent BOD and SS (mg/l).
- (2) Discharge to holding pond June 1 to November 1 with no discharge to stream.
- (3) Irrigation to golf course June 1 to November 1 with no discharge to stream.
- (4) One 10,000-gpd activated-sludge unit currently in operation.

The table on the following page summarizes the design criteria and other data pertinent to the existing treatment facilities.

Sewer Service Area Alternatives

Alternative sewer service area concepts have been developed for each of the alternative land use plans. As mentioned earlier, only the Highway 26 Recreational Corridor portion of Clackamas County was considered in the S.T.R. study. A brief description of each sewer service area alternative follows, and the reader should consult the companion S.T.R. document for further information regarding each alternative.

"Do Nothing Alternative"

The existing sewage collection and treatment facilities within the study area would continue to be owned and operated privately. Areas not presently sewered would be served by individual subsurface disposal systems, subject to permit approval. In short, the current status quo would be maintained with regard to sewage facilities.

Alternative A

Land use under Alternative A would follow existing zoning patterns and direction, allowing development to occur along the entire corridor. Accordingly, a corridor-wide sewerage system has been developed which considers two service area alternatives. The first would be to provide sewerage facilities from Brightwood to Rhododendron with a single regional treatment facility having an ultimate capacity of about 7.4 mgd being built in the Brightwood area. The other service area alternative would provide sewerage facilities from Alder Creek to Rhododendron. Here again, a single regional treatment facility would be proposed, located in the Alder Creek area. It would have an ultimate capacity of about 9.6 mgd. All of the existing treatment facilities would eventually be abandoned under both service area alternatives.

Alternative B

Under Alternative B the service areas would be limited to those areas presently sewered. In addition, a small area in the Welches vicinity would be allowed to develop and would also be included. The Rhododendron CBD, which has been identified by the DEQ as a problem area, would also be sewered.

Three subalternatives have been developed for Alternative B.

1. Build a 0.50 mgd treatment plant on the Salmon River to serve the Welches area (and possibly the Rhododendron CBD) only. The Timberline Rim plant would be upgraded and would continue to serve the Timberline Rim service area. The same would be true at Zigzag Village where that facility would be upgraded and would remain in operation.
2. Upgrade the Timberline Rim facility for use as an interim regional facility. Later, a 0.65 mgd regional facility would be built on the Salmon River and the Timberline Rim plant would be abandoned. The Zigzag Village plant would be upgraded and would remain in operation.

ESTIMATED POPULATION TRENDS FOR SEWERED AREAS ONLY

<u>Description</u>	<u>1975</u>	<u>1985</u>	<u>1995</u>	<u>Ultimate</u>
Alternative A	5,900	9,200	12,200	74,600
Alternative B				
Welches Area	610	1,470	2,070	
Timberline Rim	135	380	1,130	
Zigzag Village	15	160	250	
Total	<u>760</u>	<u>2,010</u>	<u>3,450</u>	6,480
Alternative C (Proposed Plan)				
Welches Area	800	1,850	4,510	
Timberline Rim	135	380	1,130	
Zigzag Village	15	160	250	
Brightwood - Phase 1	75	350	1,350	
Brightwood - Phase 2	185	360	560	
Total	<u>1,210</u>	<u>3,100</u>	<u>7,800</u>	20,500

Estimated populations are seasonal and year-round combined.

3. Basically, the same as 2 preceding, except that the regional facility would be built on the Sandy River.

Alternative C (Proposed Land Use Alternative)

Land use under Alternative C (shown on Exhibit 15) is somewhat of a compromise between Alternative A and B. Under this concept, the Welches area would be allowed to develop and would be sewered on a first-priority basis. Later, the Brightwood area would be allowed to develop on a phased program. As under Alternative B, the Rhododendron CBD would be sewered and the Zigzag Village plant would be upgraded and remain in service.

Two subalternatives have been developed for Alternative C.

1. Build a 1.10 mgd treatment plant on the Salmon River to serve the Welches area (and possibly the Rhododendron CBD) only. The Timberline Rim facility would be upgraded and would continue serving the Timberline Rim Development. Later, as or if the Brightwood area develops, a 1.20 mgd treatment plant to serve the Brightwood area only would be built on the Sandy River. The Timberline Rim facility would then be abandoned.
2. The Timberline Rim plant would be upgraded for use as an interim regional facility. Later, a regional plant would be built on the Sandy River. Ultimate capacity of this plant would be about 2.30 mgd.

Wildwood-Faubian Subalternative

A portion of the study area extending from Wildwood through the Faubian area and lying south of the Sandy River and north of Highway No. 26 is very densely platted, with many lots as small as 2400 square feet. Under Alternatives B and C, this region would not be sewered and individual subsurface disposal systems are proposed. However, much of the geology of this region, and indeed of the entire study area, is typified by alluvial and glacial gravel deposits. The groundwater level is often located near the surface. These conditions are unsuitable for the proper operation of subsurface disposal systems at the density of lots platted. Examination of the Clackamas County subsurface permit application records for this region seem to bear this out, as records from the Faubian area show a permit denial rate of about 58%.

Accordingly, as one option under Alternatives B and C, provisions could be made to pick up these areas on a Local Improvement District (L.I.D.) type basis should the residents wish to do so some time in the future. These local systems would probably be pressure-type systems, would be paid for by the residents of the L.I.D. and would be maintained by the county service district.

Rhododendron C.B.D. Subalternative

The DEQ has documented the existence of fecal coliform contamination in the streams below the Rhododendron central business district (CBD) area, directly attributable to subsurface disposal system failures. Accordingly, all three alternative service area concepts have included sewerage of the Rhododendron CBD. Three alternative methods of disposing of the sewage from this area have been considered. (Because Alternative A would sewer the entire Rhododendron

area, the following actually apply for Alternatives B and C only.)

1. Sewage could be pumped to the Welches area collection system.
2. A separate treatment facility and spray irrigation field could be constructed to serve the Rhododendron CBD only.
3. A holding tank could be installed and the sewage trucked to a disposal point elsewhere.

Wildwood Recreation Site Subalternative

The Bureau of Land Management, which owns and operates the Wildwood Recreation Site, has been contemplating going into Phase III development at the site. This would include additional group picnic areas, a children's play area, a mobile home parking area, additional trails and other facilities.

Under Alternatives A, B and C, three alternatives have been developed regarding the site.

1. Construct a drain field for subsurface disposal on the site.
2. Construct a separate treatment facility on the site.
3. Pump the sewage to a regional collection system.

Septic Tank Service District(s) Subalternative

In areas where it is not economically feasible to provide public sewage collection and treatment facilities, the individual subsurface disposal system is often used. Acceptability of these systems is dependent on many factors, some of which are:

1. Soil permeability.
2. Tank and drain field size.
3. Depth of groundwater.
4. Proximity to domestic water sources.
5. Proper construction.
6. How well the system is maintained.

In areas not sewered where subsurface disposal is practical, the creation of septic tank service districts might be feasible as subalternatives under Alternatives A, B or C. Here, the county would be in charge of properly maintaining, pumping and inspecting construction of subsurface disposal systems.

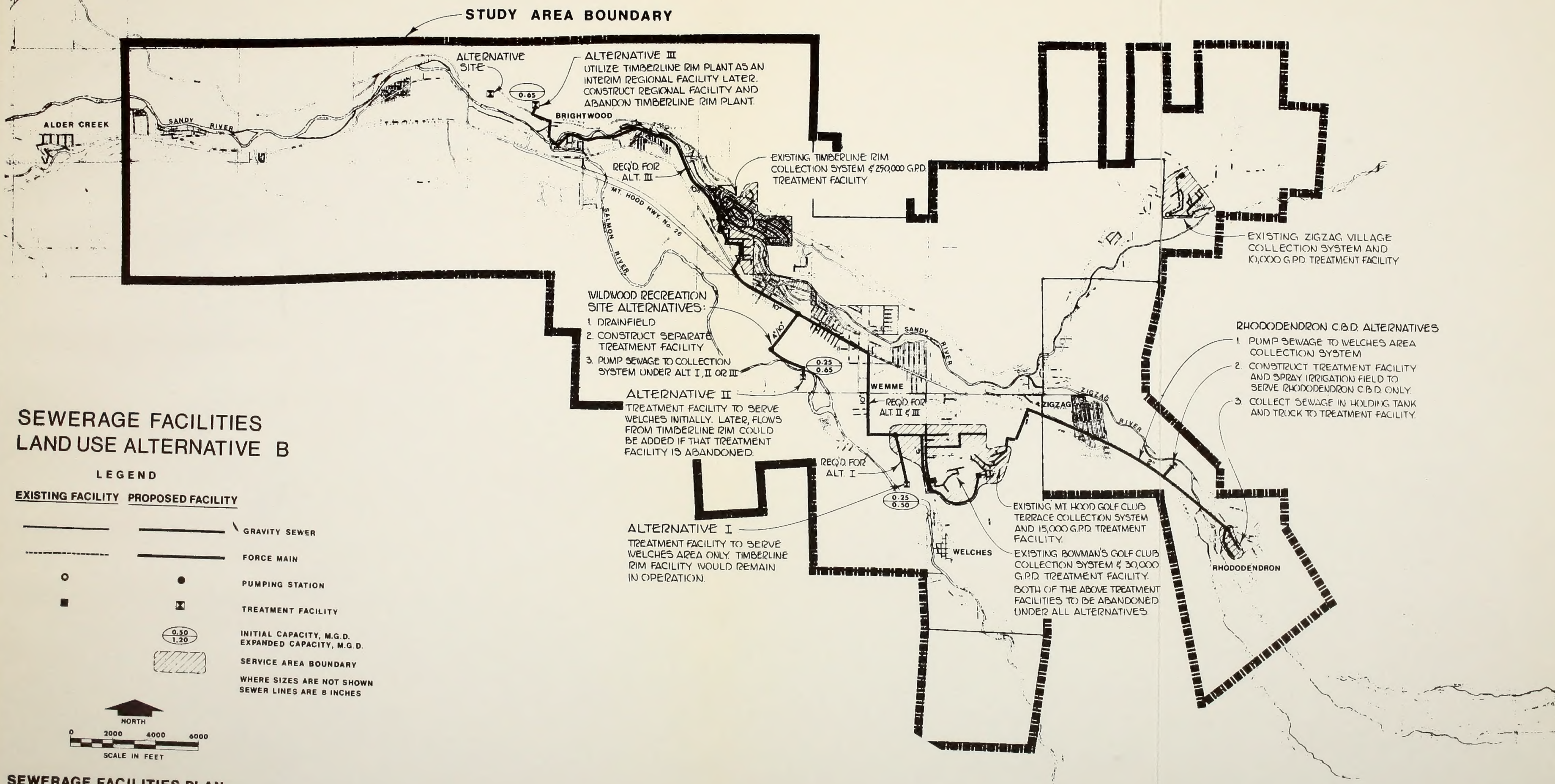
Although septic tank pumpage can be disposed of directly into a sewage treatment plant, it would probably be best to construct separate septic tank sludge handling facilities, should a septic tank service area subalternative prove feasible. Septic tank sludge, as opposed to sewage treatment plant sludge, is relatively unstable. This means it has not yet been biologically broken down into its

simplest and most inert compounds. Dosing a treatment plant with large amounts of relatively active biologic material could adversely affect its operation. Also, the septic tank sludge is high in grit material (sand, dirt, egg shells, etc.) which would cause an increased handling cost if introduced into the plant. Ultimate disposal of the sludge would probably be some form of land disposal, either by burying it or reintroducing it back to the soil as humus.

Population Estimates

Present and projected populations for Sewer Service Area Alternatives A, B and C have been estimated. Projections originally prepared by the Columbia Region Association of Governments (CRAG) and the Center for Population Research and Census (CPRC) at Portland State University were utilized for the sewerage study area.

Population projections for the sewered areas under the Alternatives were made by utilizing proposed land use densities and by analyzing past and estimated future growth trends for the areas of concern. Populations shown are seasonal and year-round combined.



SEWERAGE FACILITIES PLAN
MT. HOOD RECREATIONAL CORRIDOR
CLACKAMAS COUNTY • OREGON

SEWERAGE FACILITIES PROPOSED PLAN

LEGEND

EXISTING FACILITY PROPOSED FACILITY

		GRAVITY SEWER
		FORCE MAIN
		PUMPING STATION
		TREATMENT FACILITY
		INITIAL CAPACITY, M.G.D. EXPANDED CAPACITY, M.G.D.
		SERVICE AREA BOUNDARY
WHERE SIZES ARE NOT SHOWN SEWER LINES ARE 8 INCHES		



SEWERAGE FACILITIES PLAN
MT. HOOD RECREATIONAL CORRIDOR
CLACKAMAS COUNTY • OREGON

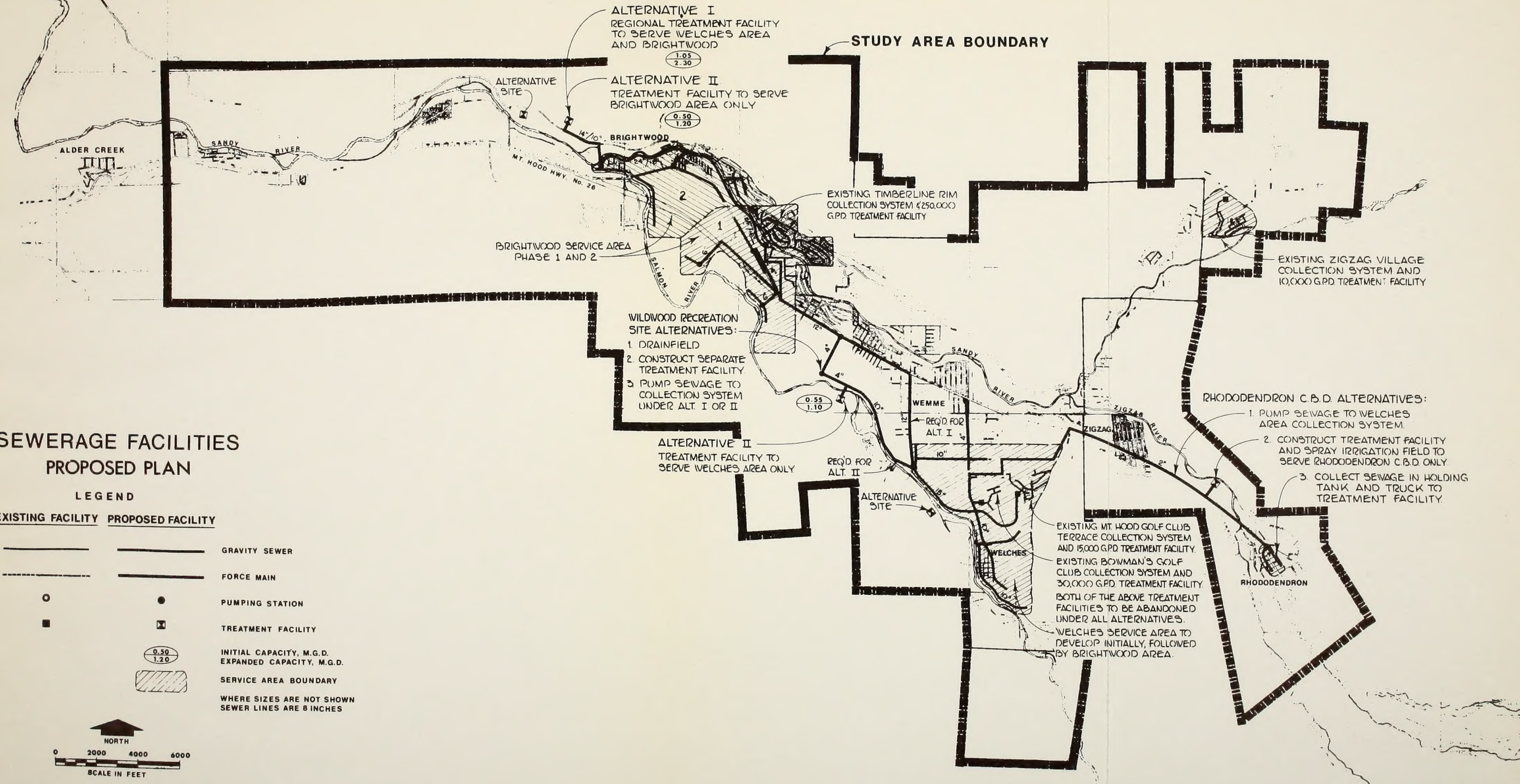


EXHIBIT 15

COST SUMMARY
ALTERNATIVE A

Description	Alder Creek to Rhododendron Service Area Concept		Brightwood to Rhododendron Service Area Concept	
	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million
Gravity Sewers	\$ 6.25	\$ --	\$ 4.48	\$ --
Force Mains	0.70	--	0.36	--
Pump Stations	3.34	0.129	2.49	0.095
Manholes	0.58	--	0.49	--
A/C Pavement Replacement	1.09	--	0.78	--
River Crossings	0.38	--	0.35	--
Subtotal	<u>\$12.34</u>	<u>\$0.129</u>	<u>\$ 8.96</u>	<u>\$0.095</u>
2.4 mgd STP	\$ 2.70	\$0.161	\$ --	\$ --
7.2 mgd Additional (after 1995)	6.00	0.350	--	--
2.0 mgd STP	--	--	2.30	0.139
5.4 mgd Additional (after 1995)	--	--	4.70	0.277
Subtotal	<u>\$ 8.70</u>	<u>\$0.511</u>	<u>\$ 7.00</u>	<u>\$0.416</u>
TOTAL	\$21.04	\$0.640/yr.	\$15.96	\$0.511/yr
Present Worth of Facilities Through 1995	\$15.40	\$3.29	\$11.26	\$2.66
Total Present Worth of Facilities Through 1995	<u>\$18.33</u>		<u>\$13.92</u>	

COST SUMMARY
ALTERNATIVE B

	Alternative I			Alternative II			Alternative III		
	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million	Est. Annual O & M \$ Million
Gravity Sewers	\$ 0.23	\$ --	\$ 0.23	\$ 0.23	\$ --	\$ 0.23	\$ 0.23	\$ --	\$ --
Force Mains	0.09	--	0.45	0.45	--	0.27	0.27	--	--
Pump Stations	0.20	0.008	0.38	0.38	0.015	0.41	0.41	0.015	0.015
Manholes	0.03	--	0.03	0.03	--	0.03	0.03	--	--
A/C Pavement Replacement	0.10	--	0.10	0.10	--	0.10	0.10	--	--
River Crossings	0.03	--	0.03	0.03	--	0.03	0.03	--	--
Subtotal	\$ 0.68	\$ 0.008	\$ 1.22	\$ 1.22	\$ 0.015	\$ 1.07	\$ 1.07	\$ 0.015	\$ 0.015
0.25 mgd STP	\$ 0.41	\$ 0.025	\$ 0.41	\$ 0.41	\$ 0.025	\$ --	\$ --	\$ --	\$ --
0.25 mgd Addition (1995)	0.33	0.019	--	--	--	--	--	--	--
0.40 mgd Addition (1995)	--	--	0.50	0.50	0.030	--	--	--	--
0.65 mgd STP (1985)	--	--	--	--	--	--	--	--	--
Upgrade Timberline Rim STP	0.10	0.025	0.10	0.10	0.025	0.91	0.91	0.055	0.055
Upgrade Zigzag Village STP	0.05	0.010	0.05	0.05	0.010	0.10	0.10	0.025	0.025
Subtotal	\$ 0.89	\$ 0.079	\$ 1.06	\$ 1.06	\$ 0.090	\$ 1.06	\$ 1.06	\$ 0.090	\$ 0.090
TOTAL	\$ 1.57	\$ 0.087	\$ 2.28	\$ 2.28	\$ 0.105	\$ 2.13	\$ 2.13	\$ 0.105	\$ 0.105
Present worth of Facilities Through 1995	\$ 1.57	\$ 0.77	\$ 2.28	\$ 2.28	\$ 0.85	\$ 2.13	\$ 2.13	\$ 0.69	\$ 0.69
Total Present Worth of Facilities Through 1995	\$2.34			\$3.13			\$2.82		
ABANDON TIMBERLINE RIM STP:	Alternative I: 1995			Alternative II: 1995			Alternative III: 1985		

PROPOSED PLAN
COST SUMMARY
ALTERNATIVE C

	Alternative I		Alternative II		Alternative III	
	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million	Est. Cost in 1975 Dollars \$ Million	Est. Annual O & M \$ Million
Gravity Sewers	\$ 1.51	\$ --	\$ 1.36	\$ --	\$ 0.57	\$ --
Force Mains	0.37	--	0.24	--	0.02	--
Pump Stations	0.81	0.029	0.56	0.021	0.17	0.007
Manholes	0.17	--	0.17	--	0.08	--
A/C Pavement Replacement	0.29	--	0.25	--	0.10	--
River Crossings	0.03	--	0.03	--	0.01	--
Subtotal	\$ 3.18	\$0.029	\$ 2.61	\$0.021	\$ 0.95	\$0.007
1.05 mgd STP (1985)	\$ 1.35	\$0.080	\$ --	\$ --	\$ --	\$ --
1.25 mgd Addition (After 1995)	1.25	0.077	--	--	--	--
0.55 mgd STP	--	--	0.80	0.044	0.80	0.044
0.55 mgd Addition (After 1995)	--	--	0.60	0.040	0.60	0.040
0.50 mgd STP (1990)	--	--	0.72	0.044	--	--
0.70 mgd Addition (After 1995)	--	--	0.78	0.047	--	--
Upgrade Timberline Rim STP	0.10	0.025	0.10	0.025	0.10	0.025
Upgrade Zigzag Village STP	0.05	0.010	0.05	0.010	0.05	0.010
Subtotal	\$ 2.75	\$0.192	\$ 3.05	\$0.210	\$ 1.55	\$0.119
TOTAL	\$ 5.93	\$0.221	\$ 5.66	\$0.231	\$ 2.50	\$0.126
Present Worth of Facilities Through 1995	\$4.68	\$0.95	\$ 4.28	\$0.93	\$ 1.90	\$0.90
Total Present Worth of Facilities Through 1995	\$5.68		\$5.21		\$2.80	

BEACON TIMBERLINE RIM STP: Alternative I: 1985
Alternative II: 1990

DISCUSSION OF ECONOMY

FUTURE ALTERNATIVES*I. ASSUMPTIONS ABOUT ECONOMIC FACTORS**CONTROLLED MARKETS*

The mere existence of this plan indicates concepts of pure competition and free market enterprise of neoclassical economists have little application in the Planning Unit. Economic factions are subject to control and the level of market activity reflects the presence of control as well as other factors. Past activity is the result of controls on growth, private market exchange, resource dependence and external factors such as weather conditions and infrastructure problems. Future growth will depend on these same factors.

RECREATION: CONTROLLED SUPPLY AND AESTHETIC VALUE

In commercial-recreation activities (and in the wood-products sector) supply is the factor most significant in determining market demand. Recreation demand is not highly uniform and responds to marginal supply and pricing policies. Supply of recreation facilities is controlled by government agencies and pricing policies at those facilities are set by private operators. All recreational demand includes preferences for consumption of free environmental aesthetic and visual commodities as well as preferences for controlled environments at man-made recreation facilities. Enjoyment of the natural environment is, theoretically, consumption of a product (somewhat intangible) that does not reduce its supply. This consumption is external to a free, competitive market and does not generally involve a cost or return to business.

A major motive of government agency intervention in the recreation market on Mt. Hood is to control level and quality of growth to preserve both the aesthetic commodities for public consumption and allow continued use of recreation facilities. In effect, federal agencies, such as the Forest Service, become agents for the public to facilitate trade (or exchange) in the "aesthetics market". The public has entrusted one of its administrative departments with the responsibility of preserving the environmental or aesthetic product and pays for the service through Forest Service Administrative costs. The "aesthetics market" transaction is completed when the public uses Mt. Hood camps and trails, for example, and receives the value of enjoying the well-preserved environment. The Forest Service, in this sense, is like a real estate agent managing trees rather than condominiums and subdivisions for the general public rather than a private landowner.

COSTS OF PRESERVATION

Preserving the environment can introduce a cost to both recreation facility managers and related commercial activity on private lands in two ways; first, opportunity for expansion, modification and alteration is restricted and therefore potential return is restricted. Second, the level of existing allowable facilities and recreation activity is not based on economic feasibility. The mix of present allowable uses may or may not permit a reasonable return to be made. Ordinarily aesthetic costs are external to a business operation.

BALANCING RECREATION USES

The Forest Service, each of the other participating agencies and the Mt. Hood Planning Unit itself should consider and provide for both aesthetic values and commercial use values in formulating plans for future controls. Separate planning in the past by each individual agency has not adequately dealt with this problem of dual and often opposing interests.

RECREATION DEMAND

Demand is sufficiently sophisticated to make marginal changes in supply feasible. Total demand for developed facilities reflects a variety of different interests and preferences in a large market drawn from a nearby area. Supply of recreation facilities is constrained and any marginal improvements will be reflected in increased use under proper management and marketing.

LABOR AND INFRASTRUCTURE

With sufficiently high wages, a much larger portion of the labor force would become stabilized. This would probably require more specialization as well.

Without annualization of jobs, the labor force must necessarily be mobile and subject to sectoral flows. A high portion of the population will tend to be mobile and migratory.

EXTERNAL FACTORS

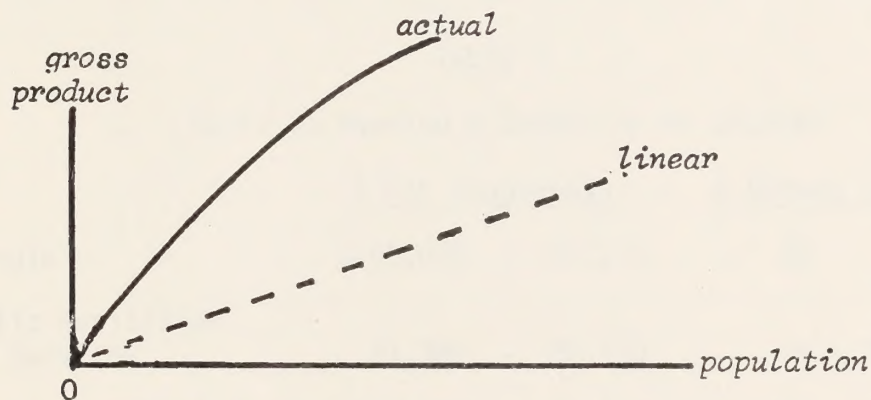
External influences are significant, in economic terms, and greatly influence the market. Demand is externally derived for recreation including seasonal dwelling, developed facilities and aesthetic resources demand. Investment in major recreation facilities is made primarily by entities external to the planning unit.

Recent changes in State labor laws will greatly increase the labor force size, thereby intensifying infrastructure problems and increasing costs, both public and private.

GROWTH RATES

Without external influences, economic activity does not grow proportionally as population in a given area grows. If population growth can be controlled to mystically move from one specific level to a higher specific level in a predetermined or planned fashion, then economic activity will increase at a faster rate. The term, economies of scale, means as certain population thresholds are reached new types of business activity become feasible. Consequently, additional revenue generates more growth and economic activity expands at a geometric rather than a linear rate. The following graph demonstrates the relationship for a relatively small population base.

GRAPH 3



This expected growth pattern applies to the Mt. Hood Planning Unit.

Accurate estimates of future economic activity cannot be made because this rate of increase is not known and future external influences cannot be predetermined. Controls available to government agencies, however, assure some regulation of growth.

Reasonable projections based on the linear method can indicate the relative impact of the three proposed growth alternatives. Certain ratios exist in present activity between economic indicators and population, production and land use. These can be used to project values for future activity. These values will underestimate the values in Alternative A by the greatest amount and alternative B the least amount.

EXHIBIT Y

DIRECT CAPITAL AND OPERATING COSTS

The cost estimates of the draft EIS are based on a recent comprehensive analysis of community development expenditures prepared by Real Estate Research Corporation for the Council on Environmental Quality, et al (April 1974). This study not only demonstrates the savings possible in planned growth patterns but also indicates in detail the total cost picture for different levels of community growth. The analysis treats direct capital as well as operating and maintenance costs, and breaks down these costs by specific facilities and services. This includes schools, public facilities and services (fire, police, etc.), streets and roads, and utilities (sewer, water, electric, etc.). For a representative community of 33,000 population and 10,000 units on 6,000 acres, the direct capital, operating and maintenance costs of key service facilities over a ten year period is shown in Table I. The range and variation in figures reflects the type of growth pattern, whether low density sprawl or dispersed growth at one end of the scale and very concentrated, planned development at the other extreme.

Table I

Costs to Develop a Community of 33,000*

	<u>\$ (in thousands)</u>	<u>% Direct Capital</u>
1. Schools	\$ 55,025 - 55,119	82
2. Public Facilities and Services	21,380 - 22,190	74 - 76
3. Streets and Roads	23,071 - 38,965	97 - 99
4. Utilities	25,767 - 67,115	87 - 99
Total Costs	\$125,243 - 183,389	85 - 88
-per capita	\$ 3.79 - 5.56	

A "neighborhood of 2,800 to 3,300 population and 1,000 units demonstrates, of course, a much lower total capital and maintenance cost pattern and does not require nearly the range of services and facilities as a community of 33,000. Table II shows a cost breakdown relative to this level of development, with variation according to design pattern.

*Exclusive of land acquisition and residential construction costs.

Table II

Costs to Develop a "Neighborhood" of 3,000*

	<u>\$ (in thousands)</u>	<u>% Direct Capital</u>
1. Schools	\$ 1,234 - 1,442	19
2. Streets and Roads	2,083 - 2,689	97 - 99
3. Utilities	3,148 - 4,132	88
Total Costs	\$ 6,465 - 8,263	78 - 80
-per capita	\$ 1.96 - 2.95	

The sensitivity of such figures to the Mt. Hood area needs to be further examined. It may be shown, for example, that total school costs are appreciably lower due to the high seasonal occupancy factor while sewage collection costs are much higher due to difficult terrain and geologic circumstances. Nevertheless, for general assessment purposes, these figures serve as a basis for a more complete gauge of the total potential cost of each alternative growth level. In addition, they may not be all that far removed from actual cost requirements. The RERC analysis assumes a \$900-1,060 cost factor per student while, based on current enrollment and budget figures, the Welches Elementary District has a very comparable operating expenditure of \$1,180 per student. Furthermore, the recent preliminary sewage study estimates by ST&R (capital and operating) indicates \$18 million to serve 42-45,000 population on 6,000 acres (Rhododendron to Alder Creek), as compared to the RERC estimate of \$8-12 million needed to provide sewers to a community of 33,000 on 6,000 acres.

*Exclusive of land and residential costs.

EXHIBIT Z

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

DEC 3 1975



REPLY TO
ATTN OF: M/S 443

NEGATIVE DECLARATION

To All Interested Government Agencies, Public Groups, and Individuals:

As required by guidelines for the preparation of environmental impact statements (EIS), an environmental review has been undertaken on the following proposed EPA action:

Public Law 92-500 grant to:

Government Camp Sanitary District
Government Camp
Oregon 97028

For construction of:

Expansion of existing sewerage treatment plant
with additions to the existing sewerage system.
Project Number C-410441

Funding:

Total estimated eligible cost: \$654,400
(EPA 75% \$490,800; Government Camp Sanitary
District 25% \$163,600)

Proposed project involves upgrading and expanding the existing sewerage treatment plant and some additions to the sewerage system. The new treatment plant will consist of a comminutor, primary and secondary clarification, rotating biological contactors, polishing filters, and an aerobic digester. Sludge will be removed for disposal on land, pursuant to State regulations. The attached map illustrates the proposed sewer system master plan. A "Sewerage Study" for the Government Camp area states that it is probable that it will be many years before the area is sewered as shown on this attached map. Consequently, this will be achieved through phased construction to areas where additional new development will be allowed. Presently, the District is served by a secondary treatment plant constructed in 1958. Problems associated with this plant involve the water quality of Camp Creek, which flows through Government Camp and drains to the Zigzag River, which drains to the Sandy River. The existing water quality of Camp Creek is generally considered good, but it is dependent on the successful operation of the District's existing treatment plant which discharges

to the creek. Often, the plant operates below peak efficiency, creating adverse effects on Camp Creek, particularly with respect to bacteria levels. Due to the wide range of winter recreational activities, day-visitor loads have continued to increase to the point of overloading the existing treatment plant, resulting in inadequately treated wastes being discharged to Camp Creek. The construction of new trunk sewers is required to provide adequate service to those areas designated for increased development.

Primary environmental impacts of the proposed project are those associated with construction. The greatest of these impacts will occur at the existing plant site when the old plant will be expanded and upgraded. The existing site is located on U.S. Forest Service land under the terms of a special use permit. The proposed project will require an additional 3,000 square feet to accommodate the expansion. This will require the removal of a number of 30-foot tall coniferous trees. Impacts due to equipment noise, dust, and traffic control will be mitigated or eliminated by protective provisions within the contract specifications. Where new sewers are constructed and the surface vegetation is destroyed, the areas will be reseeded and replanted in an effort to return the land to its original appearance.

Primary beneficial impacts to occur as a result of the proposed action will be the improved level of treatment provided by the upgraded treatment plant and, consequently, the improved water quality of Camp Creek.

Secondary impacts due to the proposed action are associated with induced changes in land use patterns and population densities. Land use planning for the Government Camp area is presently being prepared by the Mt. Hood Interagency Planning Unit Team (HOOD/INPUT). The planning team has proposed four alternate "futures" for the planning area, with each alternative designating where and when development will occur. These "futures" have been reviewed and commented upon by the public, and now the planning team is preparing a draft environmental statement that will present options developed from the public response. The proposed project is in conformance with both of the HOOD/INPUT proposed density options and is in conformance with the existing land use plan and state-wide goals and guidelines.

The existing population of the Government Camp area is approximately 120 permanent residents and 300 part-time seasonal residents. Peak winter day-visitor loads on a heavy weekend exceed 8,000 persons. The capacity of the new expanded treatment plant will be 225,000 gallons per day average flow for the winter and 130,000 gallons for the summer. Present peak flows have reached 160,000 gallons so the projected reserve capacity is 65,000 gallons per day. The district proposes to allocate this capacity as follows: Frontage Road Interceptor to serve 15 existing units belonging to the Oregon State Highway Department and the U.S. Forest Service, 20 existing unsewered dwellings, 67 future part-time dwellings, 10 future permanent dwellings, and an estimated 1500 increase in visitor usage. The 77 new dwelling units permitted by the land use plan will not be built all at one time; instead, they will occur steadily over the project's 20 year design life. Impacts associated with the new dwellings will be due to construction activities

and will be temporary. Support facilities will not be stimulated by the proposed project because only 10 new permanent dwellings are projected for the next 20 years. Impacts to wildlife are also considered minor. Most or all development will occur in areas of the village that have already experienced building.

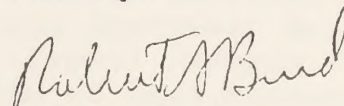
The assessment process, which included two public hearings on February 8, 1974 and May 9, 1975, did not indicate that a significant environmental impact will result from the proposed action. There was, however, a significant amount of interest generated by the first public hearing. The hearing was attended by approximately 20 people, with some 4 registering objections. Their concerns dealt mainly with project design, particularly sludge storage capacity to handle the expected winter loads. The District responded that the plant would have the capacity to handle the winter loads.

The most significant objections concerned the excess capacity of the treatment plant and the possibility that it would allow explosive growth and significantly degrade the environmental quality of Government Camp. Due to this objection, EPA required from the District additional information dealing with allocation and effects of excess capacity. In light of this additional information submitted by the District, a second public hearing was held on May 9, 1975. The information illustrates that the project will have the capacity to permit 77 new units and that most of the capacity is allocated to existing units and increased visitor flows. Essentially, no further objections have been raised and a preliminary decision not to prepare an environmental impact statement has been made.

An environmental impact appraisal, summarizing the assessment and explaining why an EIS is not required, is on file at the above office and is available for public scrutiny. Copies of the environmental impact appraisal will be mailed upon request.

Comments supporting or disagreeing with this decision may be submitted to EPA for consideration. After evaluating the comments received, the Agency will make a final decision; however, no administrative action will be taken on the project for at least fifteen (15) working days after release of this negative declaration.

Sincerely,



Robert S. Burd

Director, Water Division

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